OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

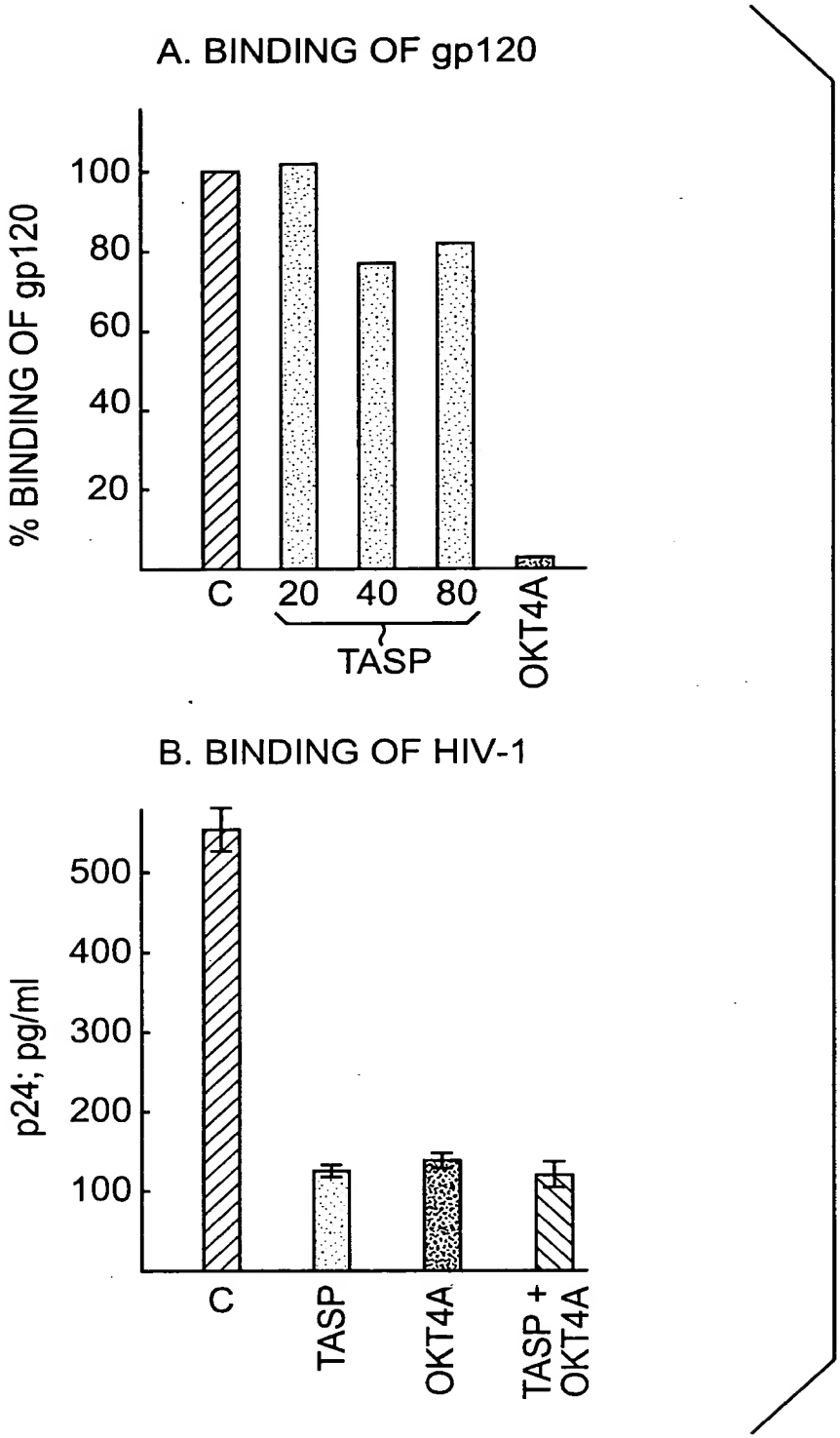


FIG. 1

OIPE JC
OCT 16 2002
PATENT & TRADEMARK OFFICE

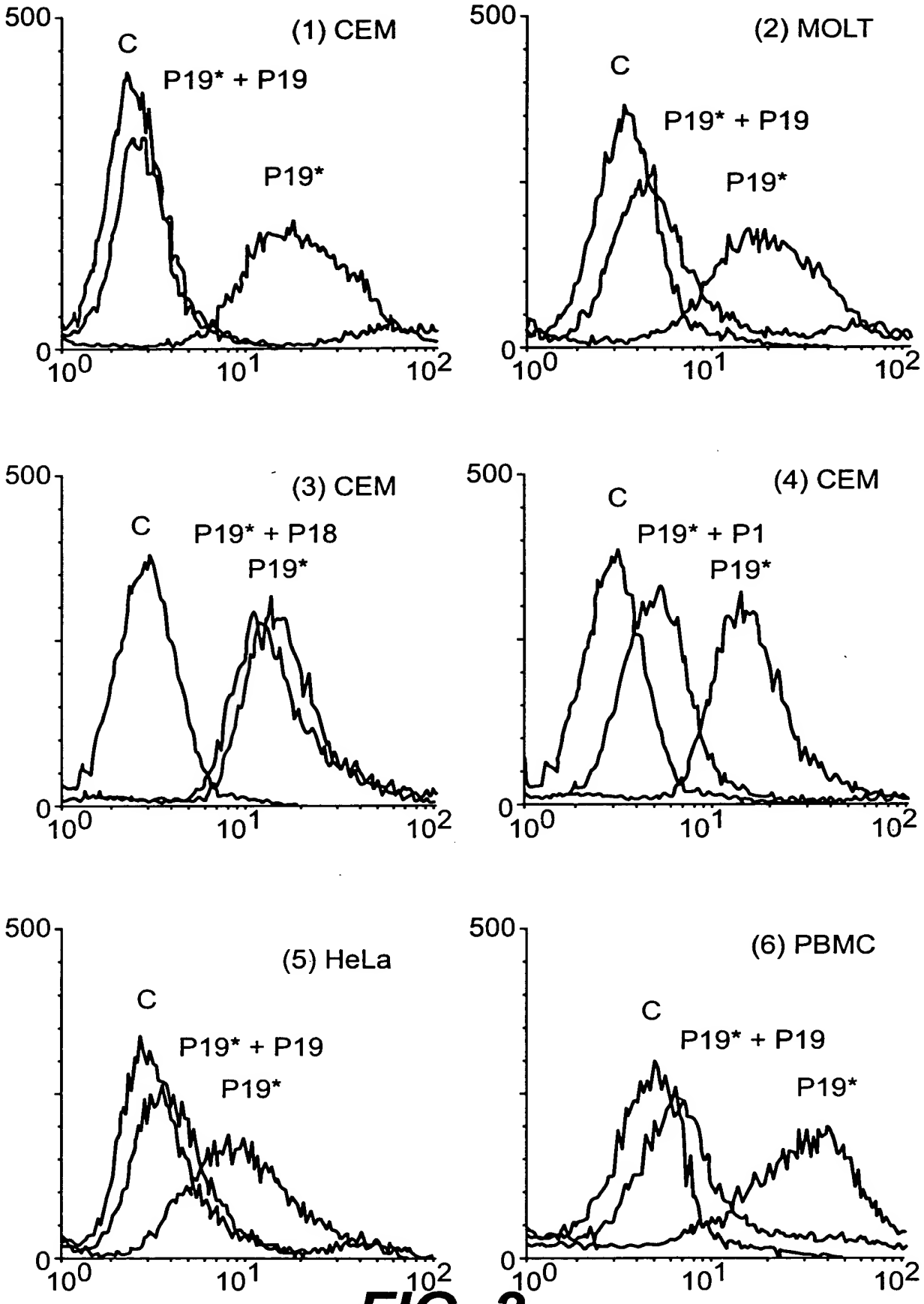


FIG. 2

PATENT & TRADEMARK OFFICE
OCT 16 2002
OIPE

SELECTED PREFERENCES:

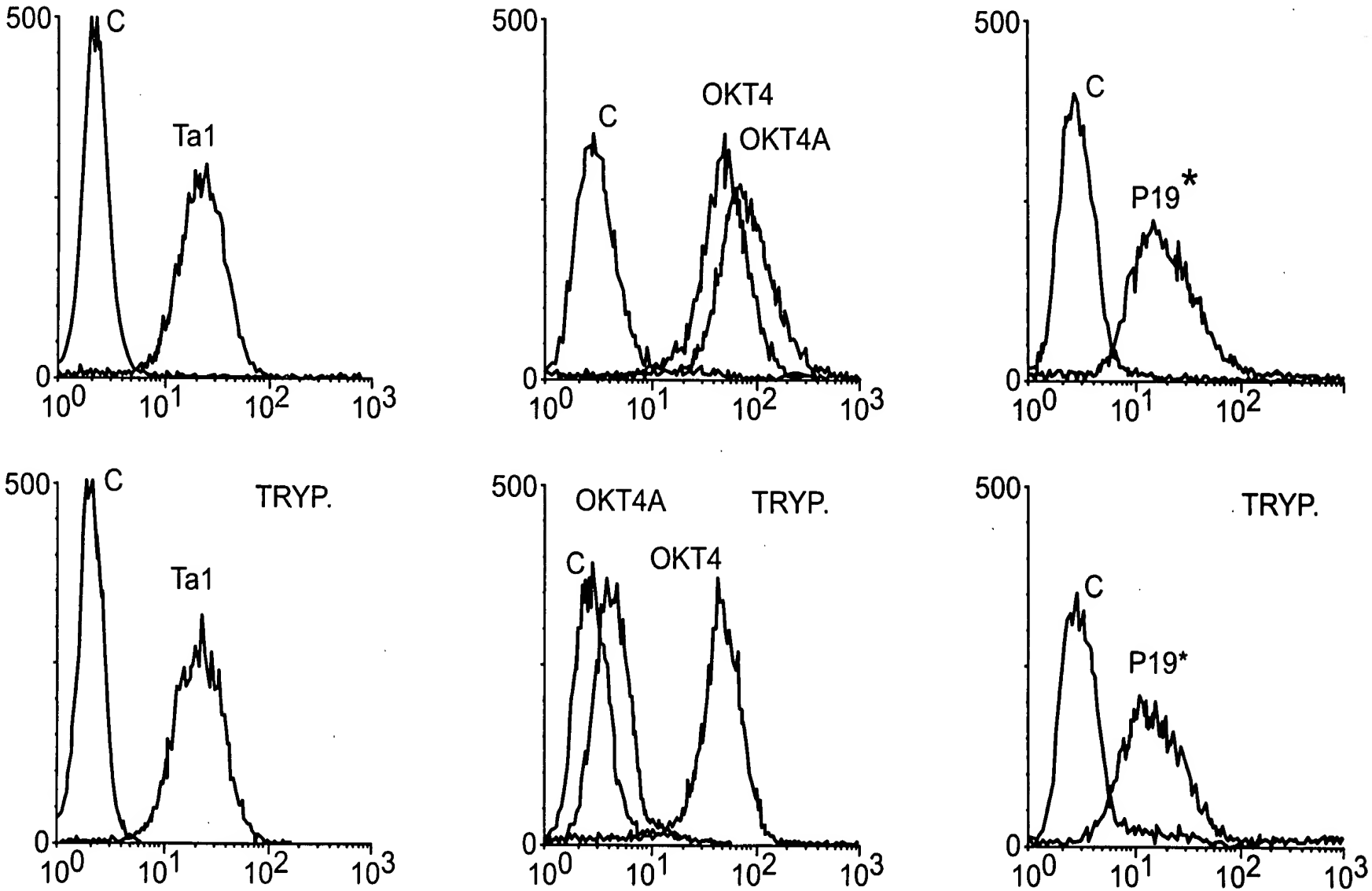


FIG. 3A

PATENT & TRADEMARK OFFICE
OCT 16 2002

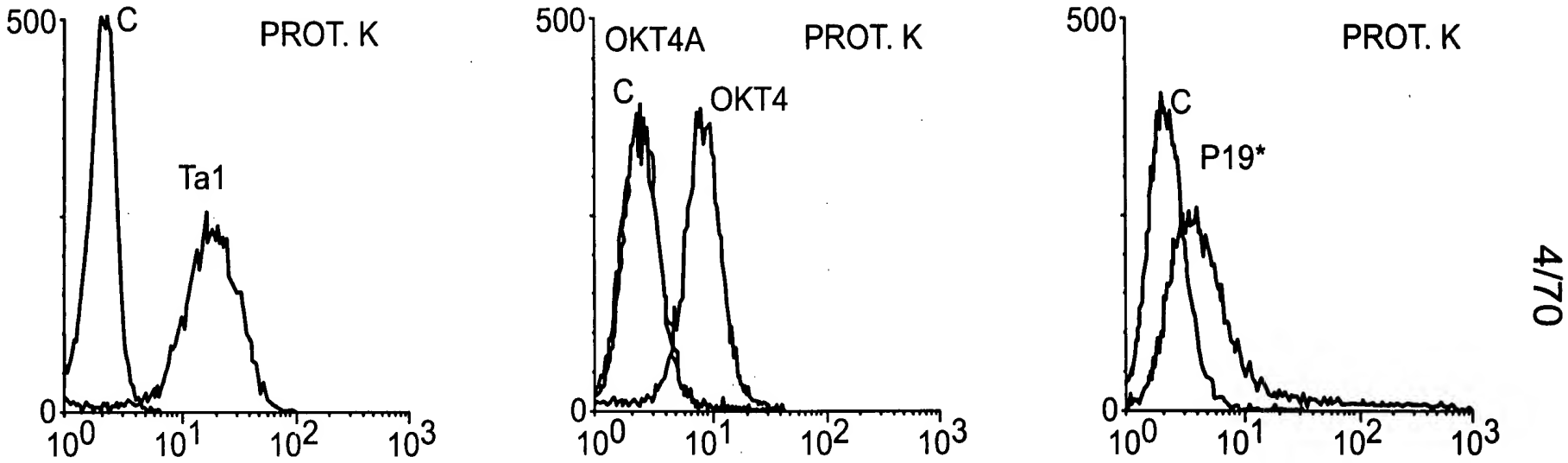


FIG. 3B

OIPE JC100
OCT 16 2002
PATENT & TRADEMARK OFFICE

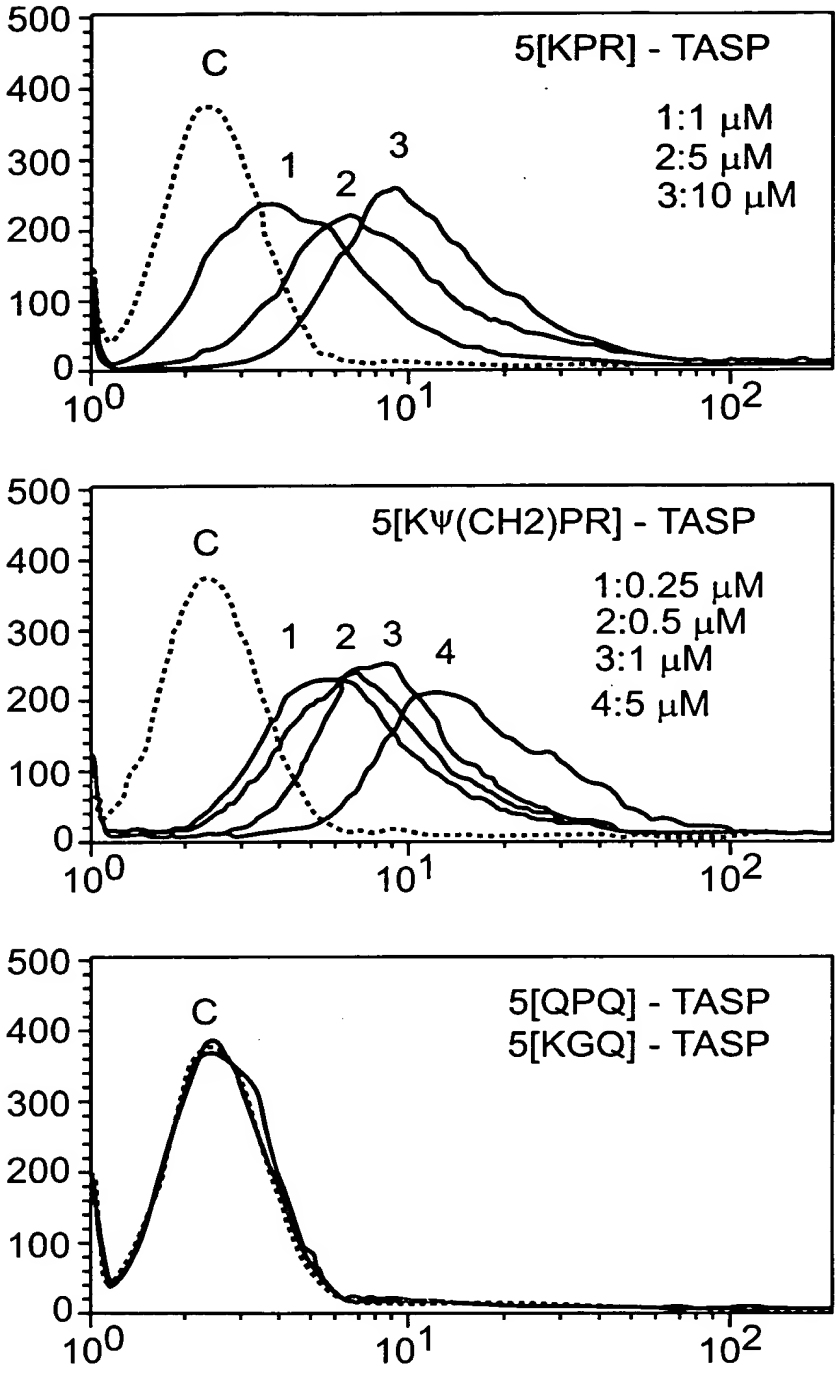


FIG. 4

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

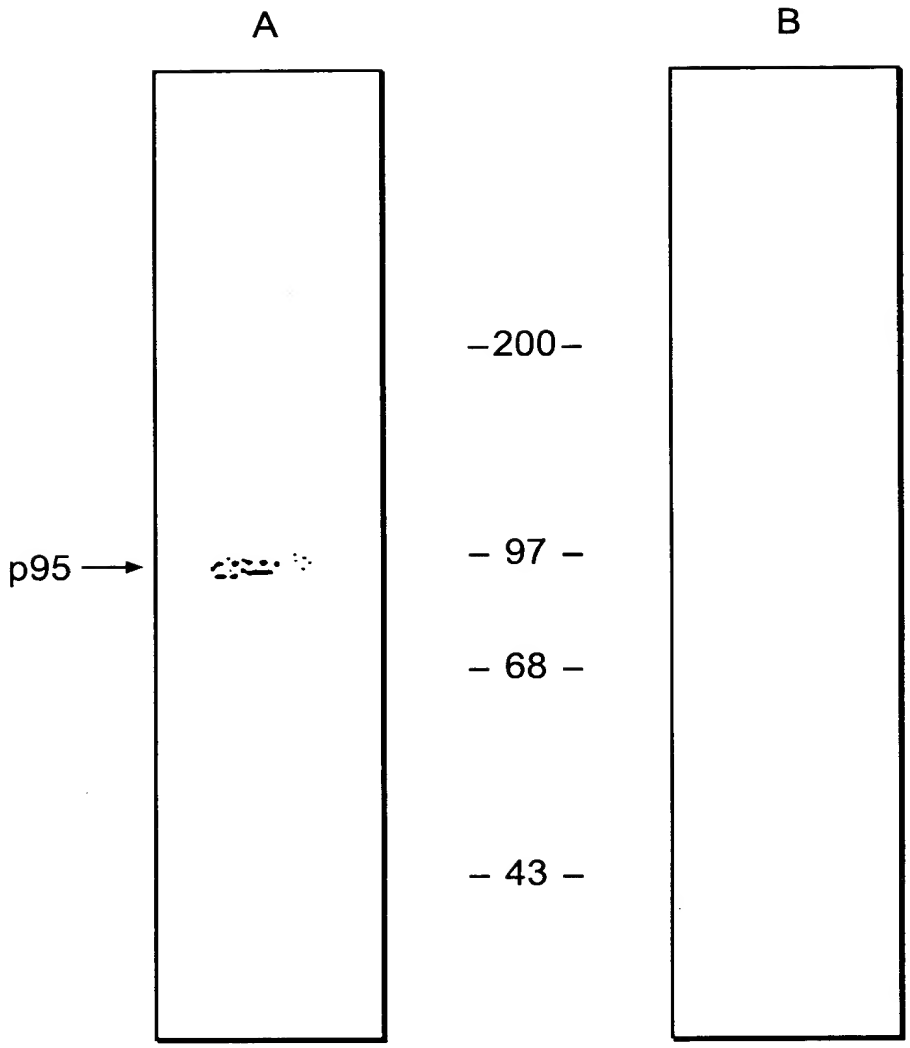


FIG. 5

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

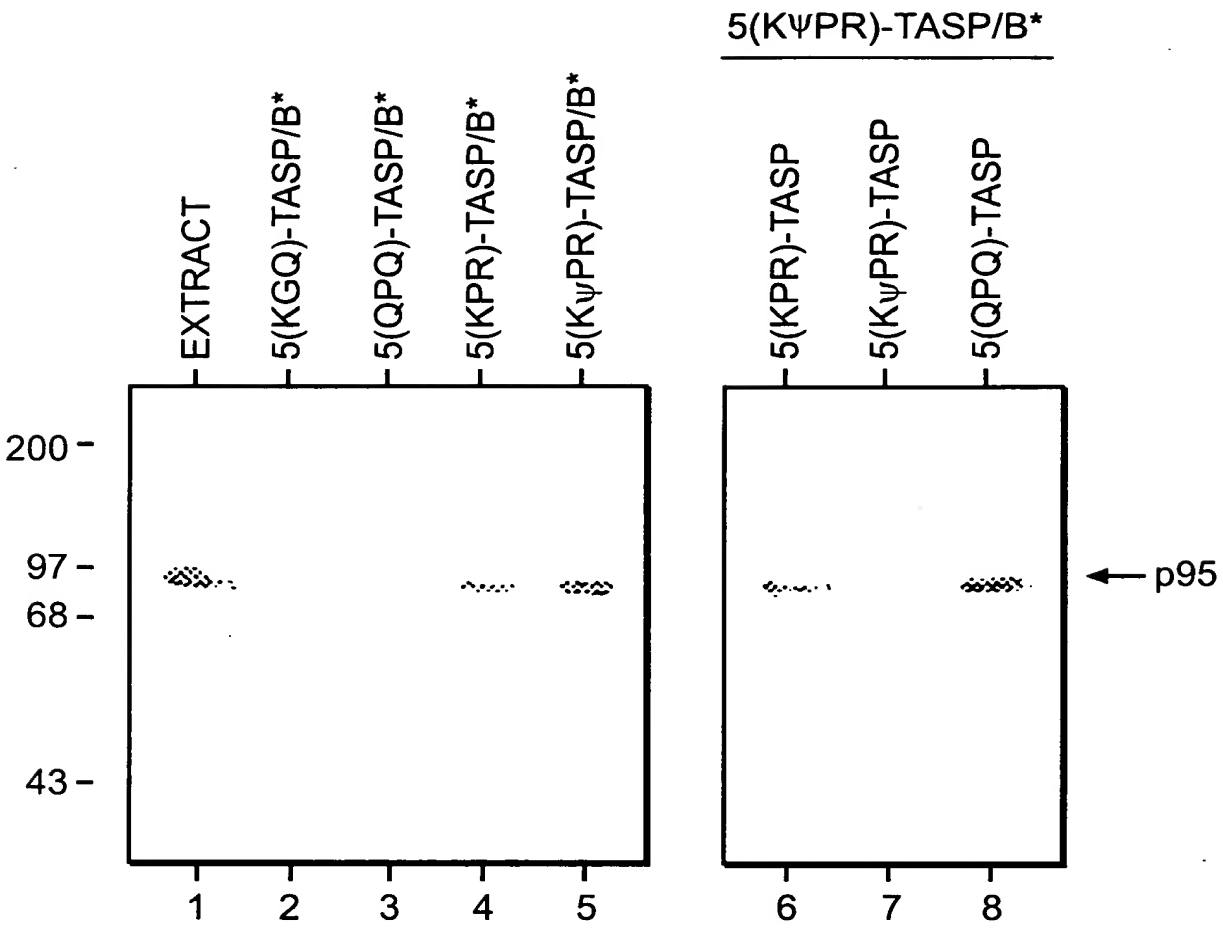


FIG. 6

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

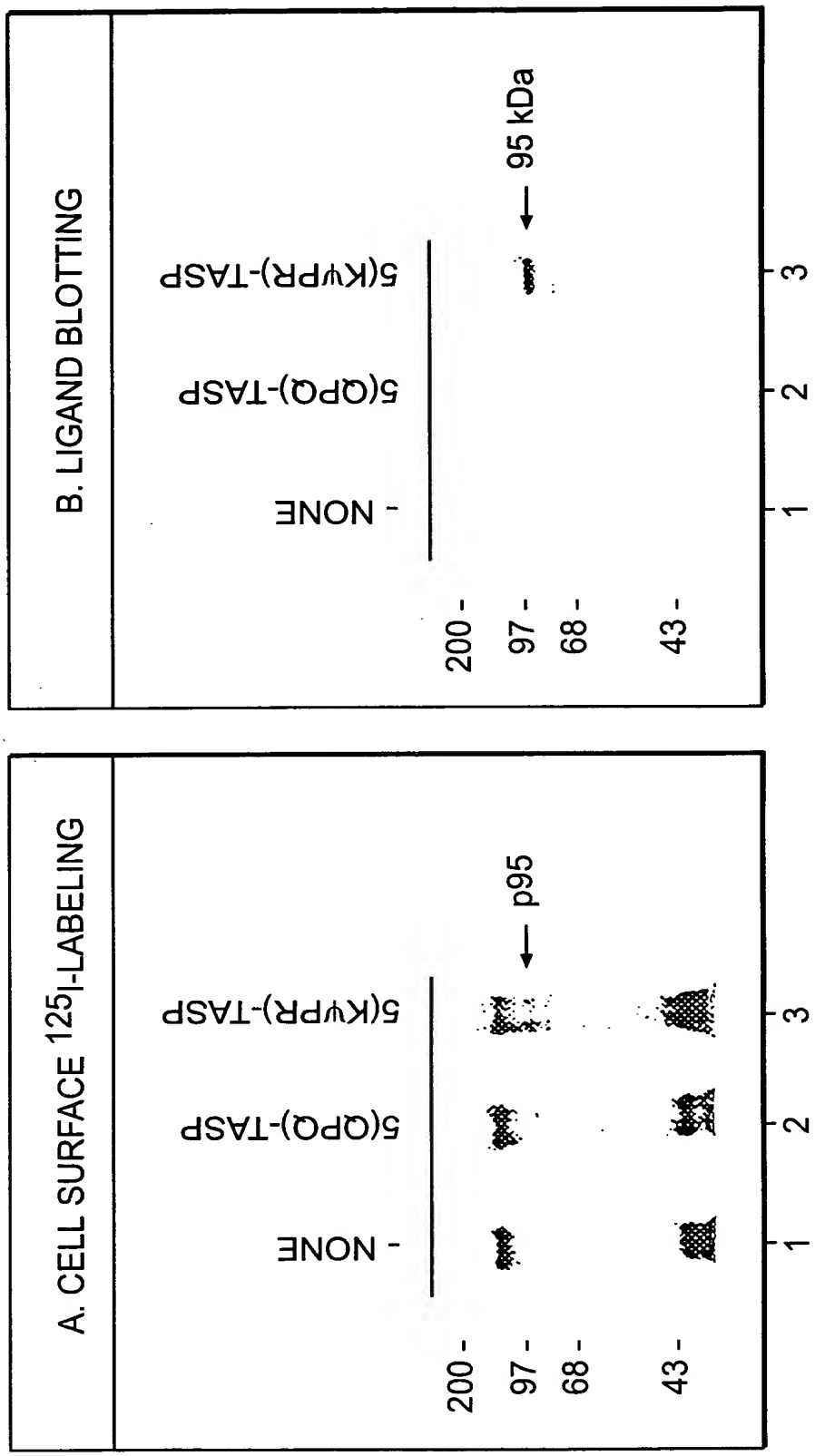


FIG. 7

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

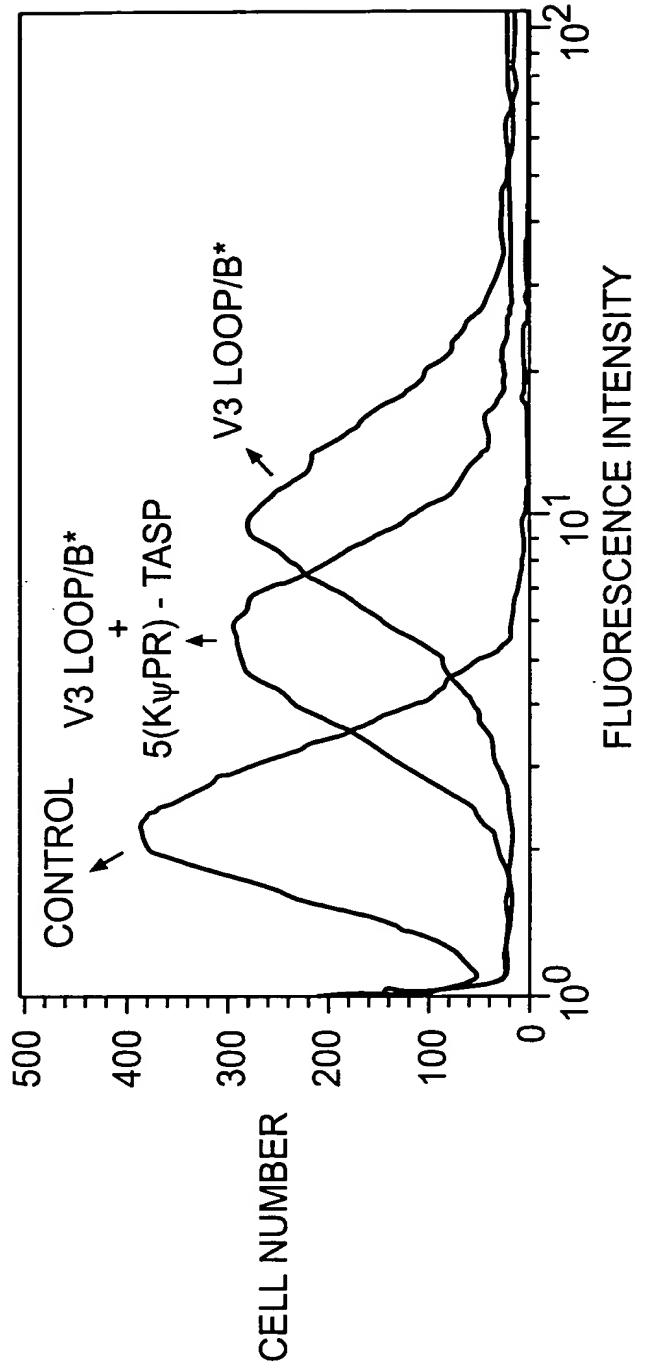


FIG. 8A

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

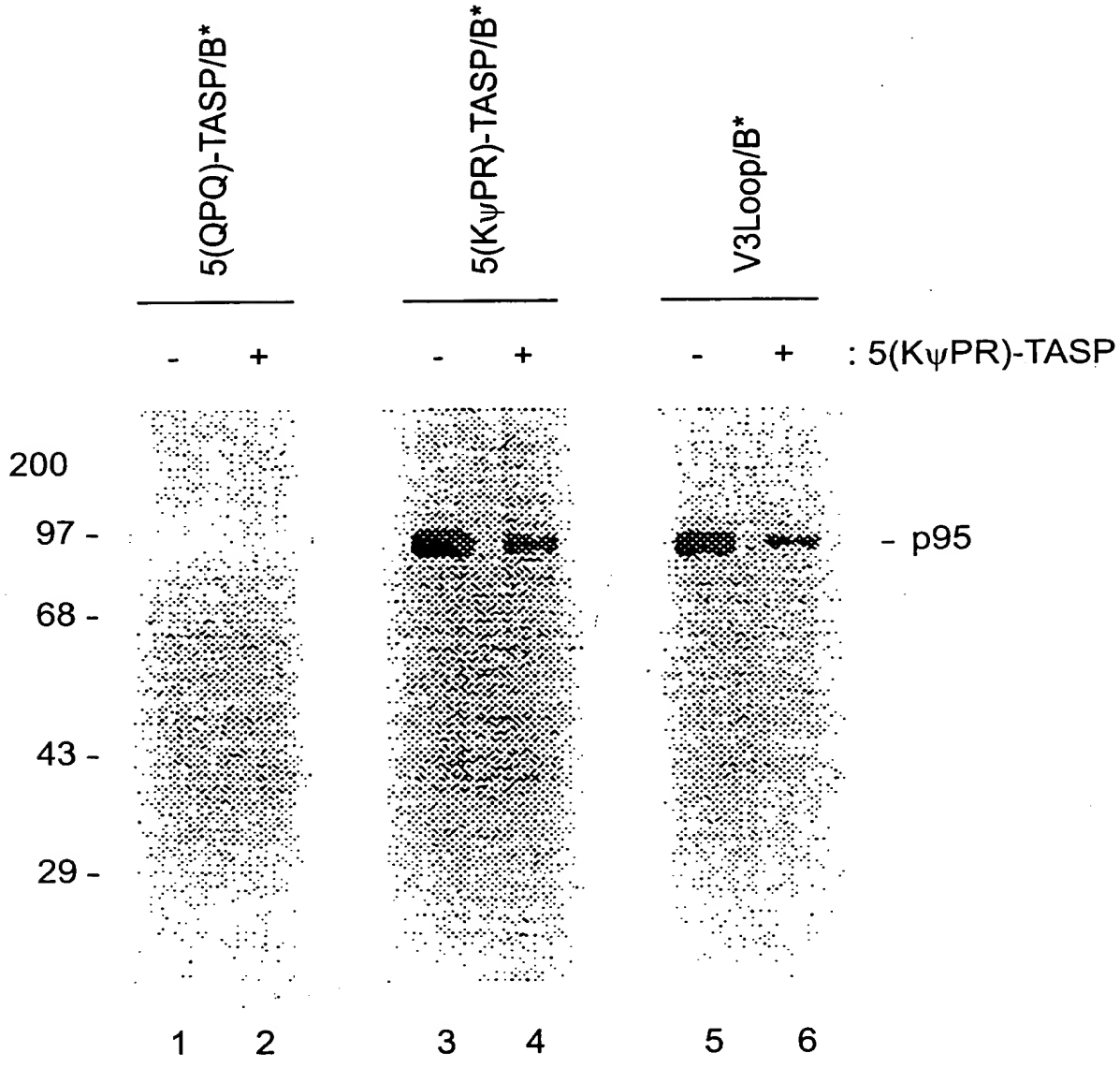


FIG. 8B

OIPE JC100
OCT 16 2002
PATENT & TRADEMARK OFFICE

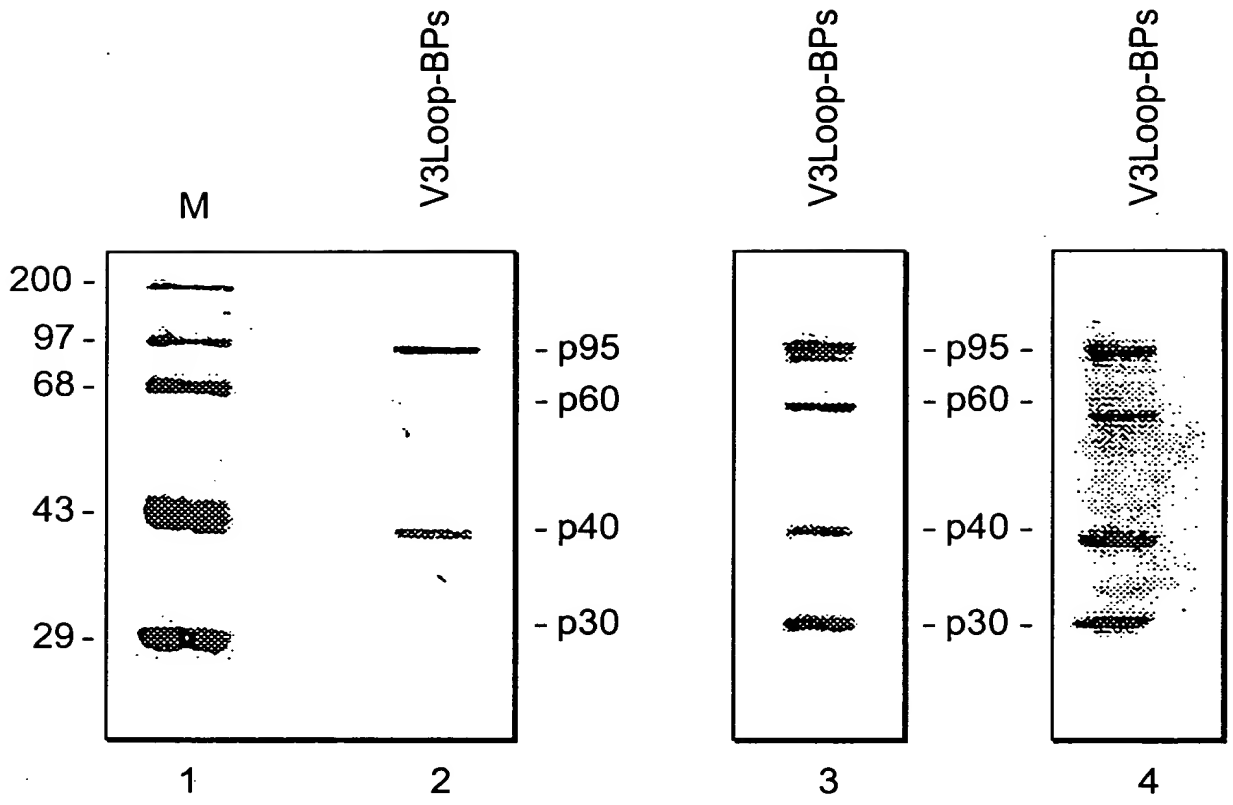


FIG. 9

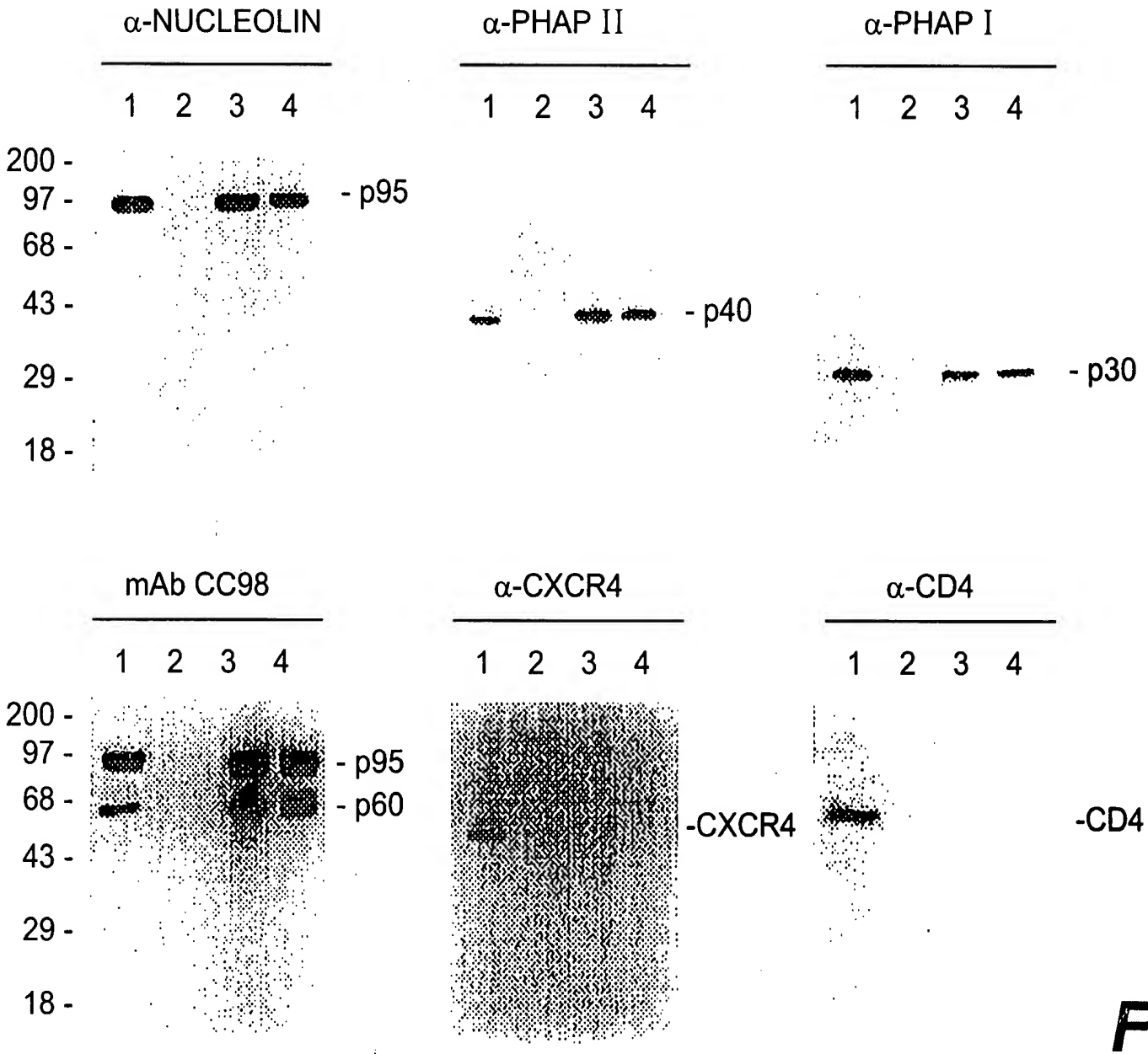


FIG. 10

OIPE
PATENT & TRADEMARK OFFICE
OCT 16 2002
JC1790

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

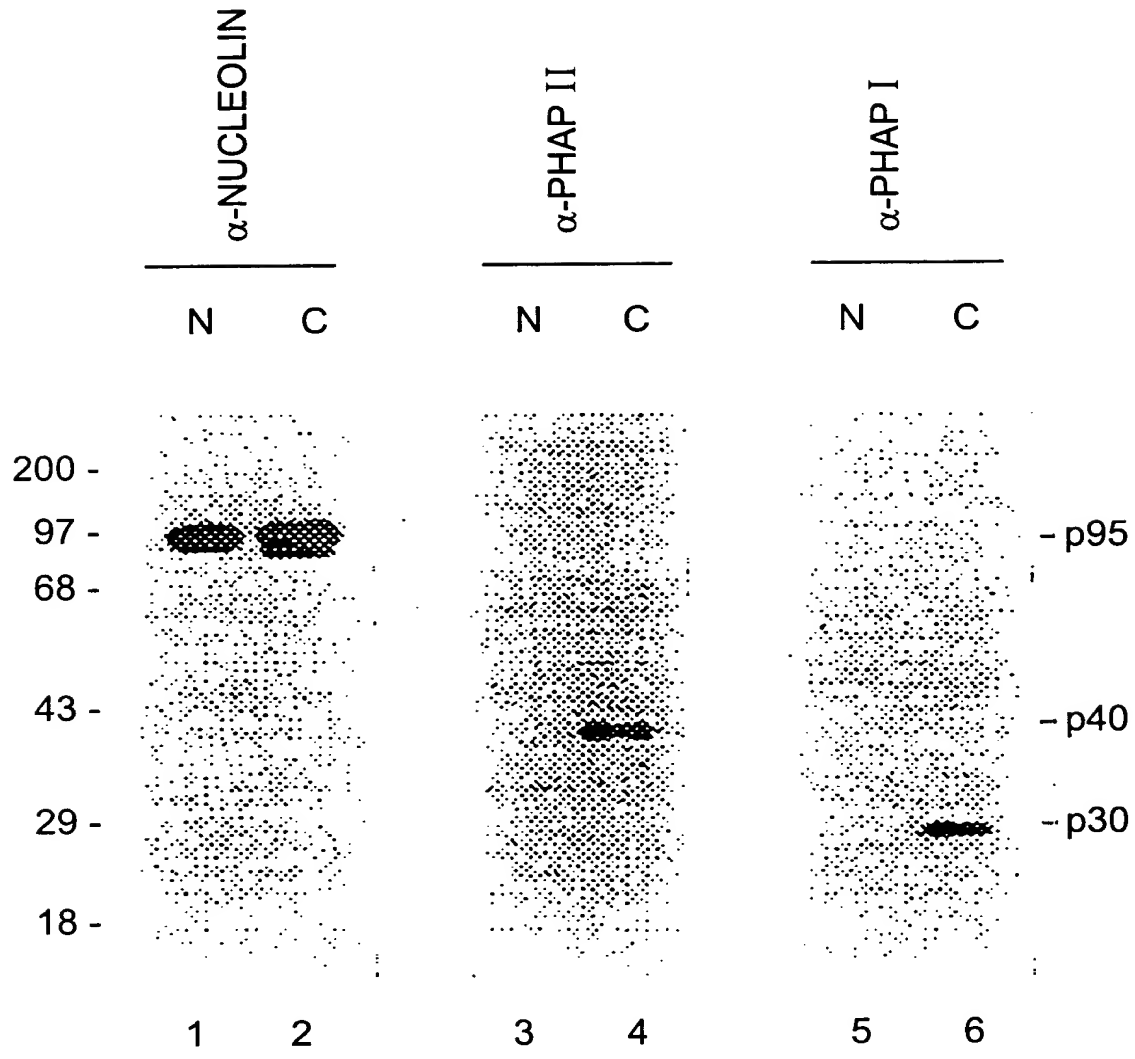


FIG. 11

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE
JC100

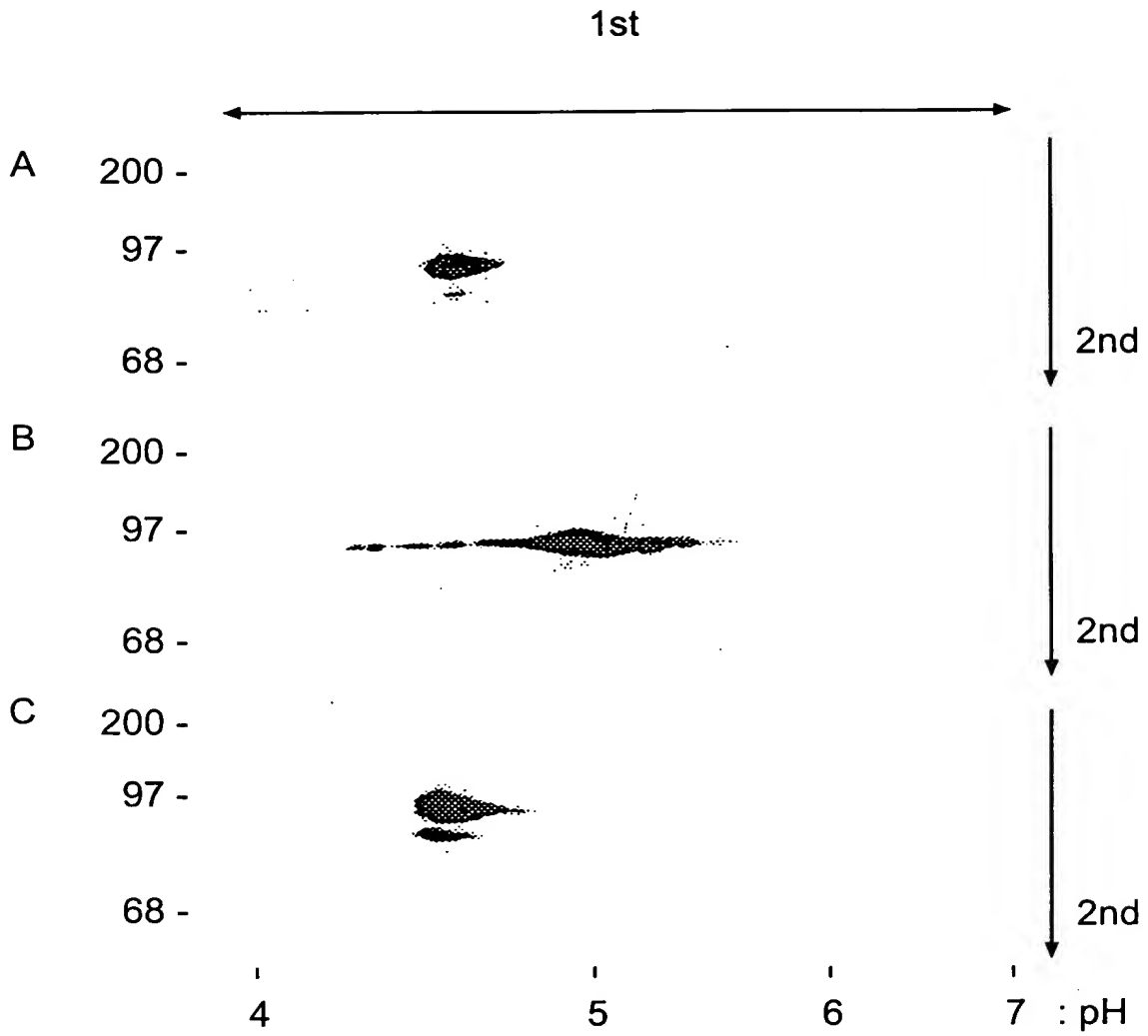


FIG. 12

PATENT & TRADEMARK OFFICE
OCT 16 2002
JC180
OIPE

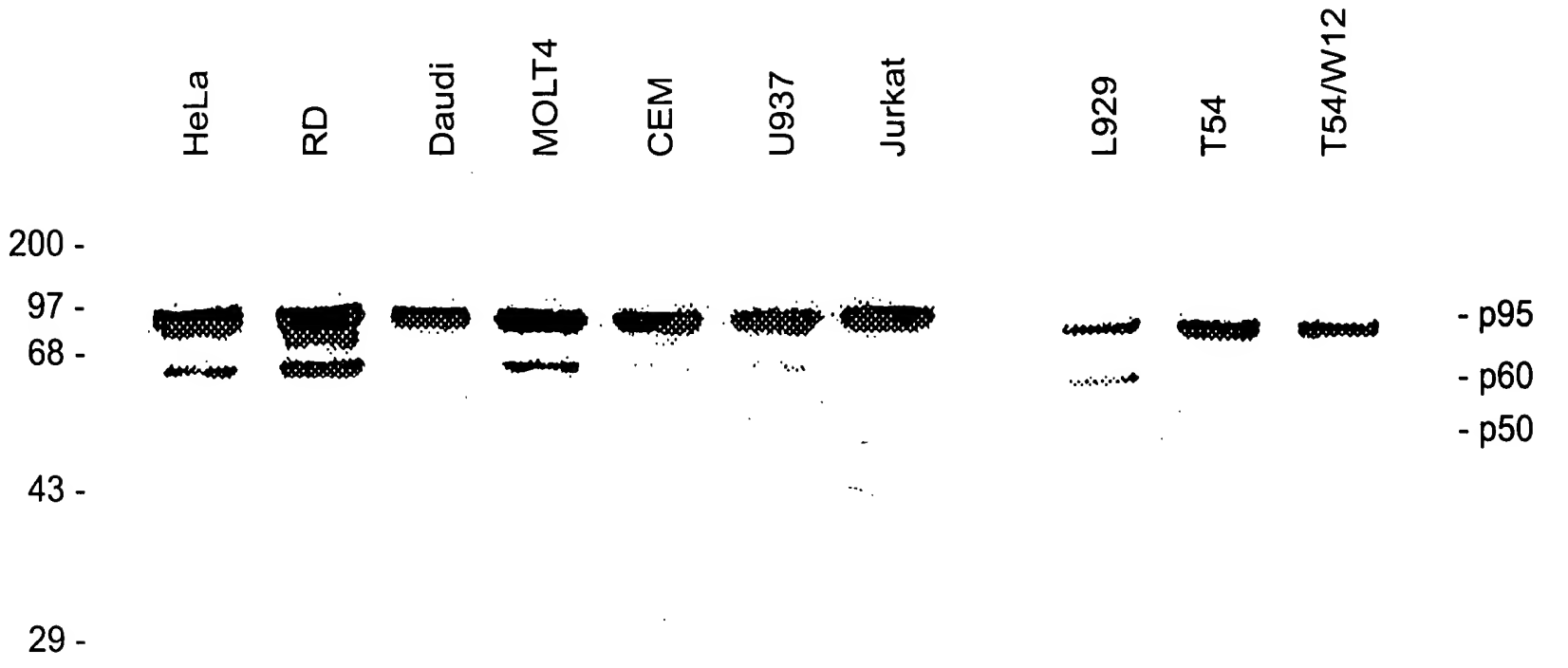


FIG. 13A

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

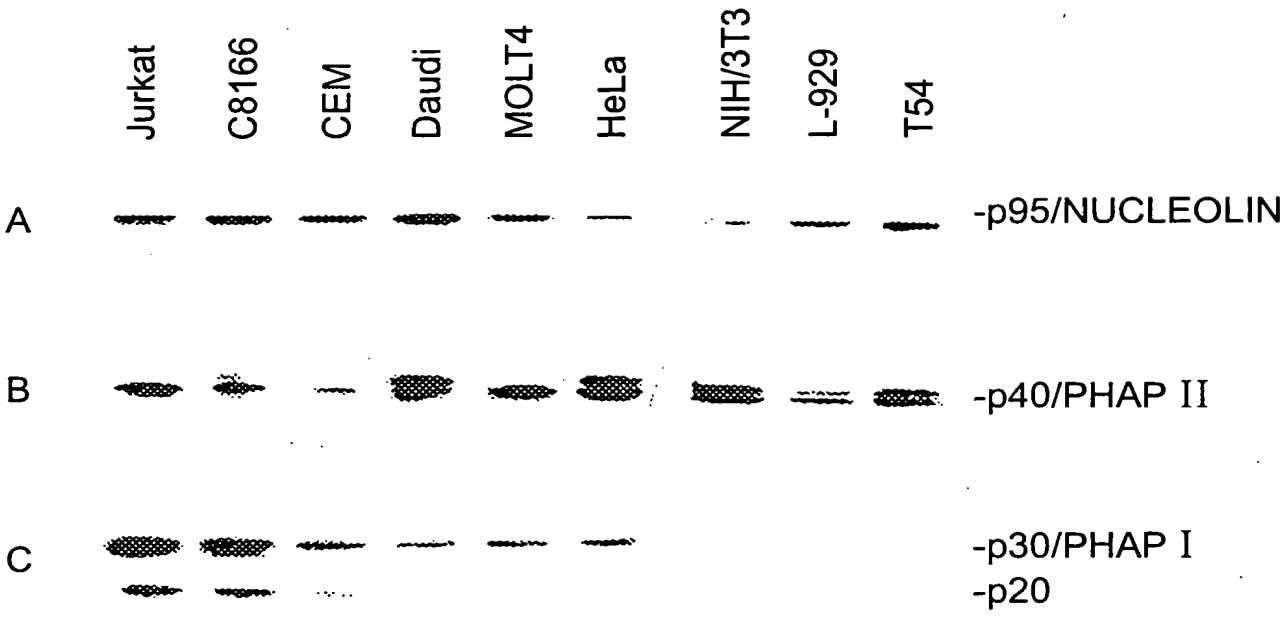


FIG. 13B

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

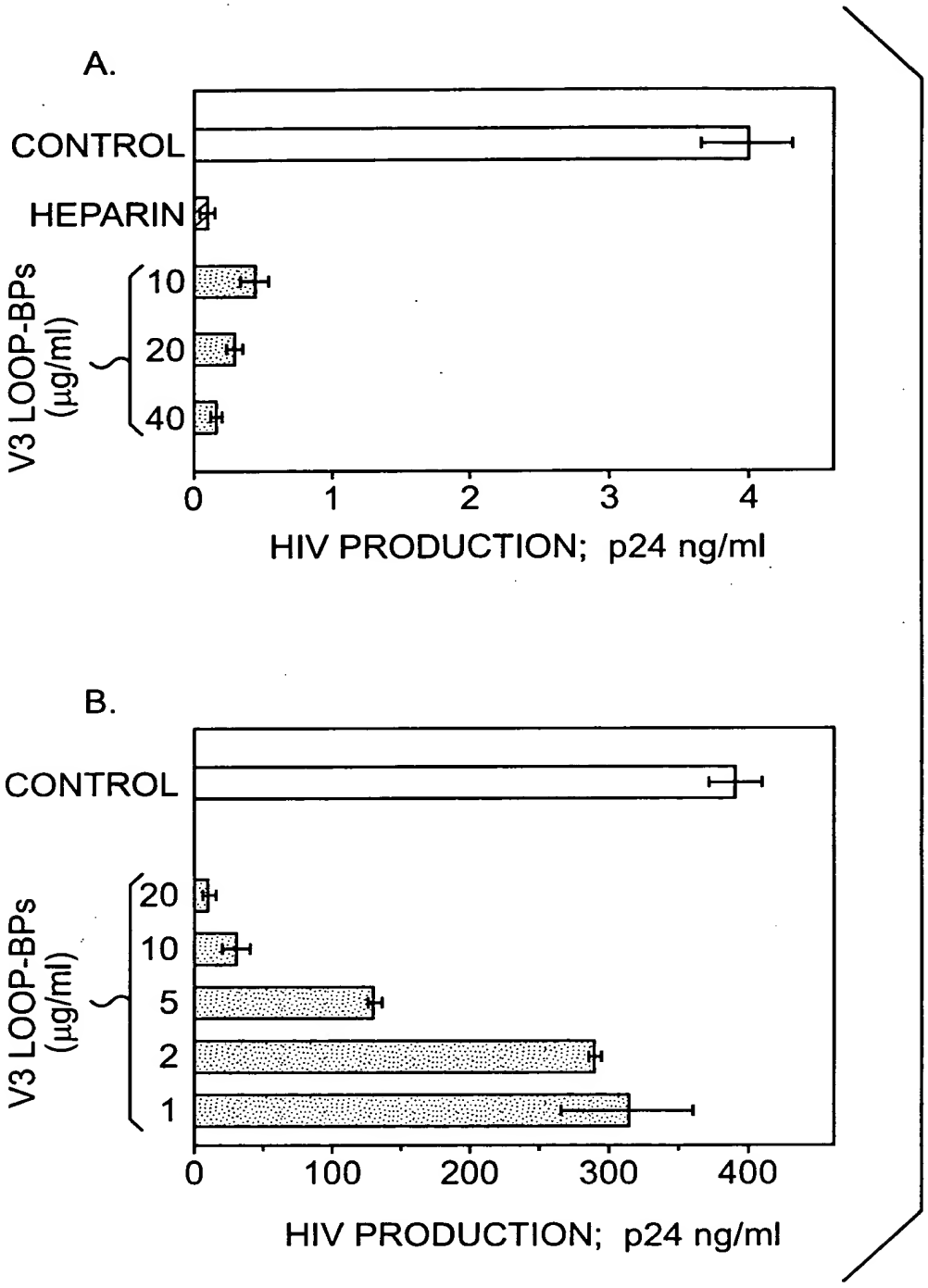


FIG. 14

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE
JC100

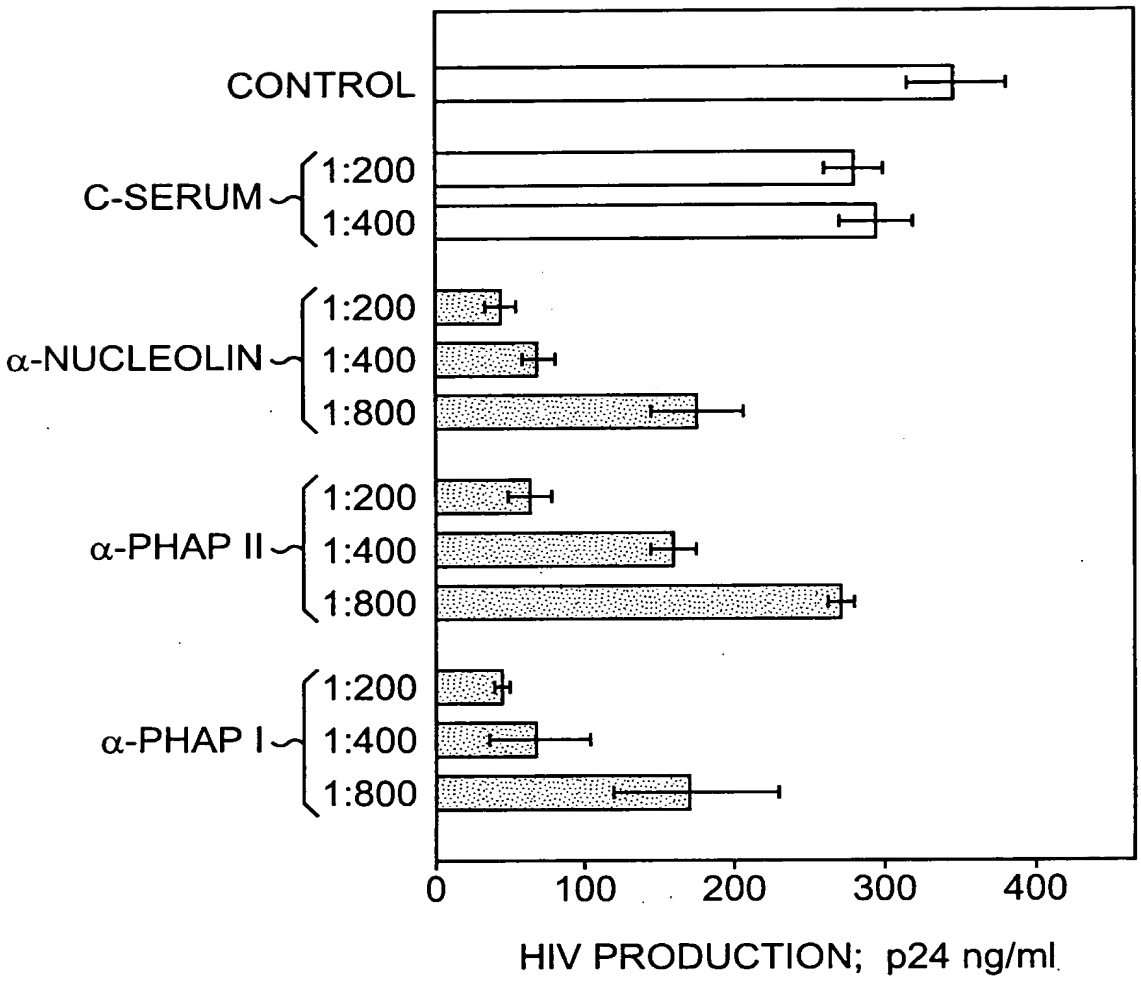


FIG. 15

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

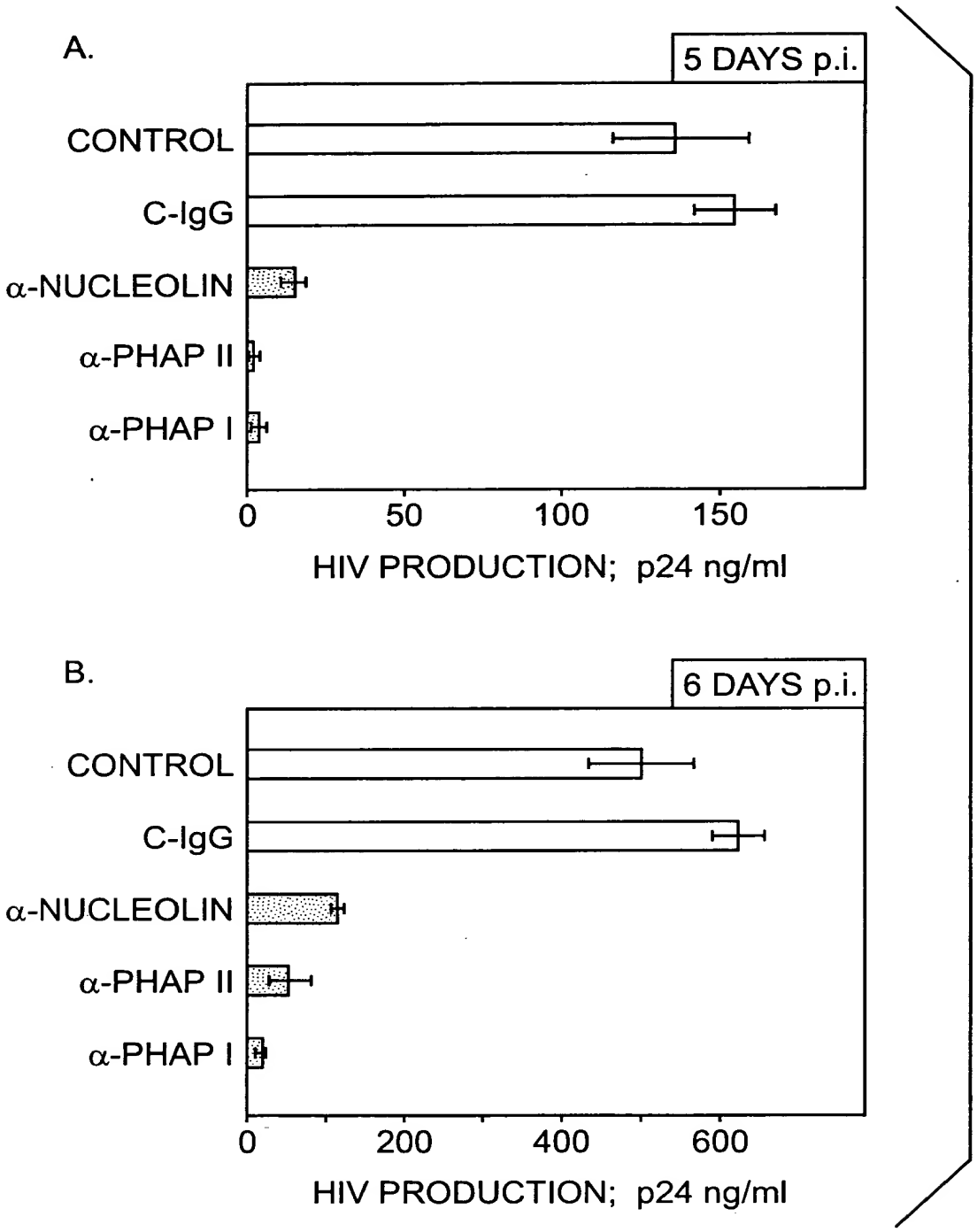


FIG. 16

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

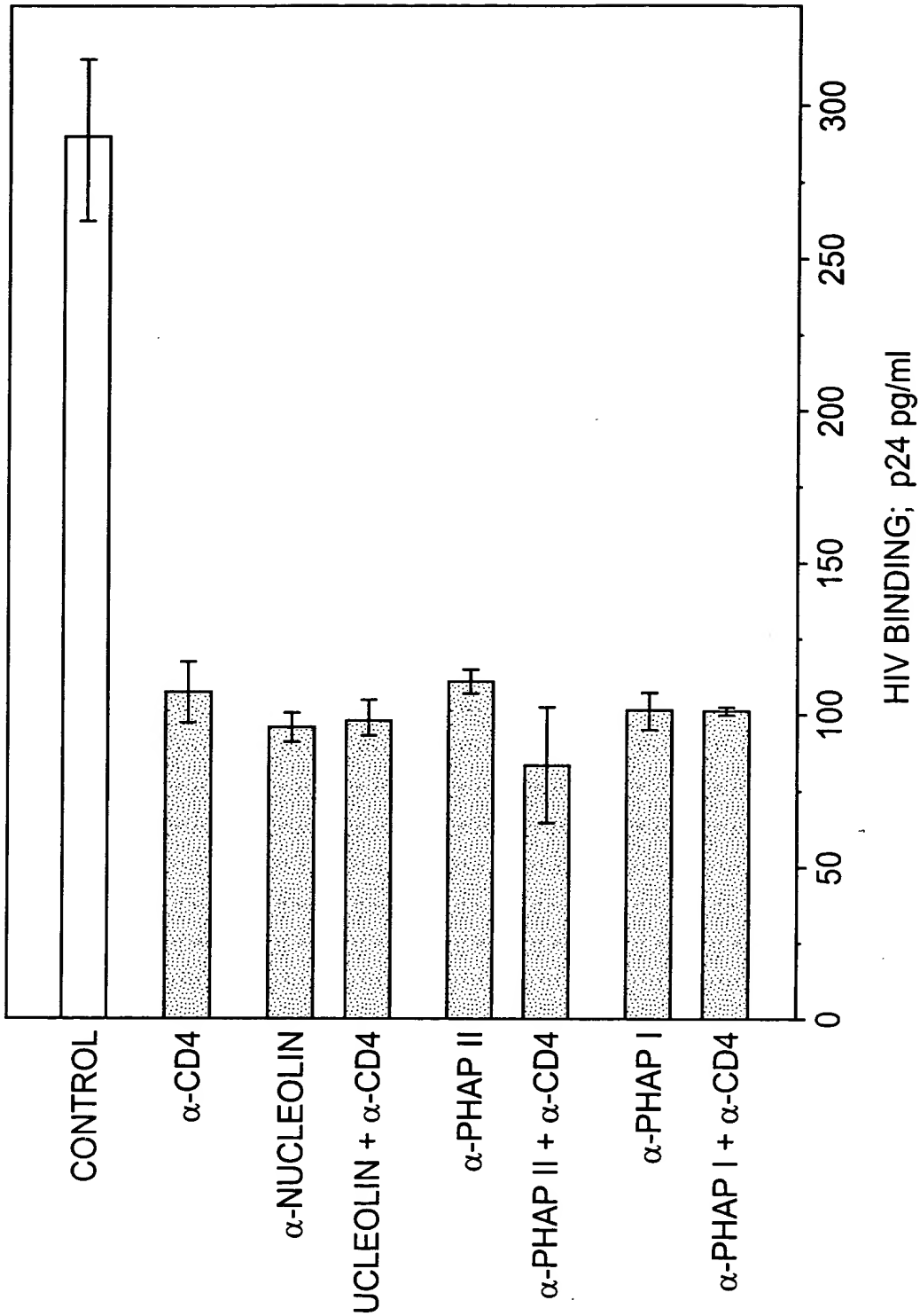


FIG. 17

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

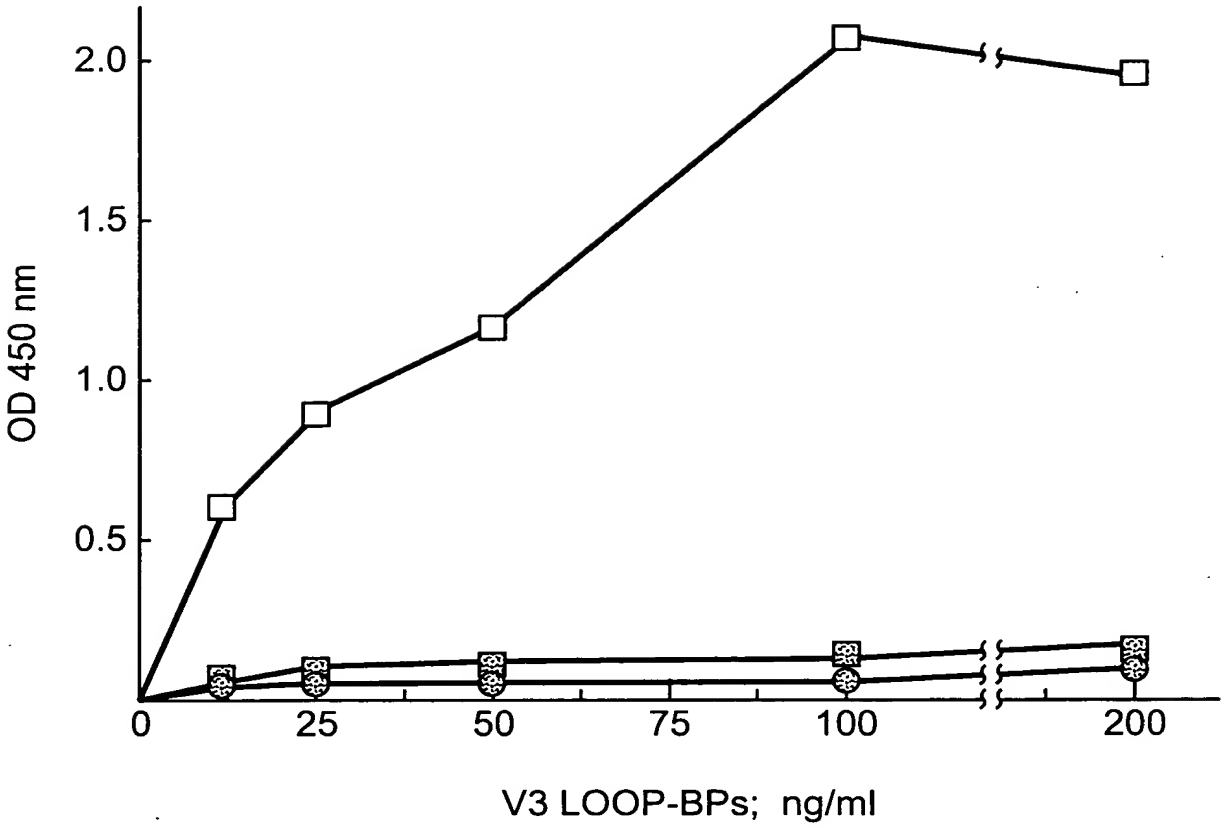
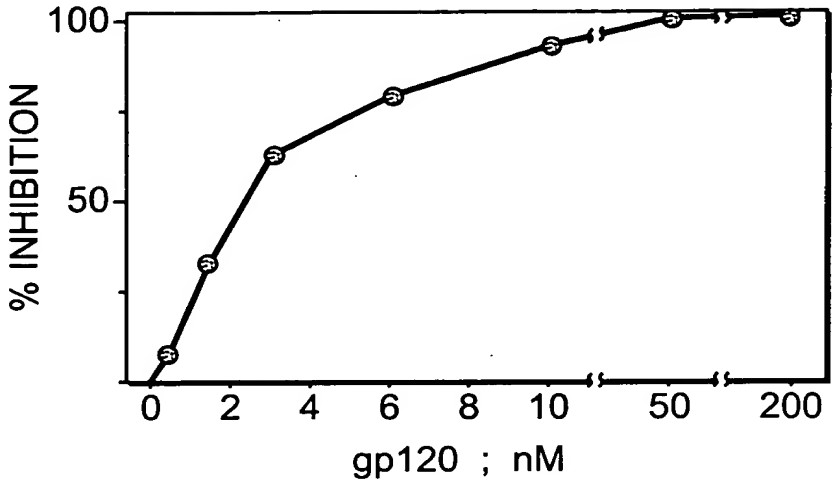


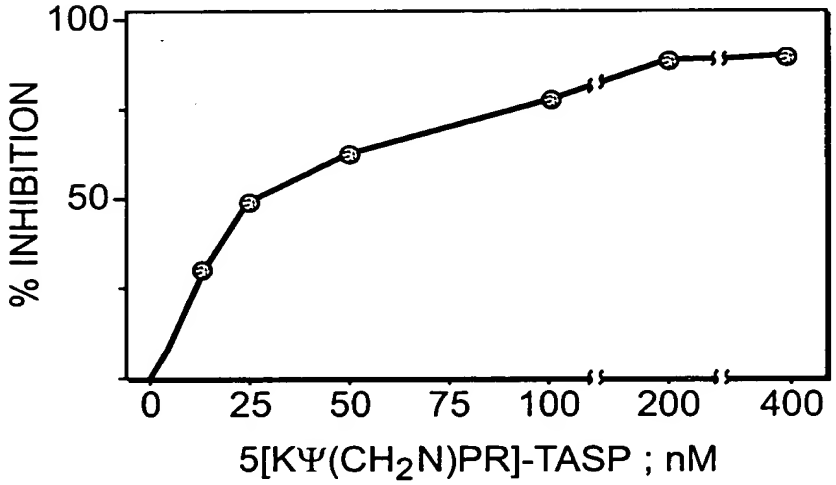
FIG. 18

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

A. 5[K $\Psi(CH_2N)PR$] -TASP BINDING TO THE V3 LOOP-BPs



B. gp120 BINDING TO THE V3 LOOP-BPs



C. gp120 BINDING TO THE V3 LOOP-BPs

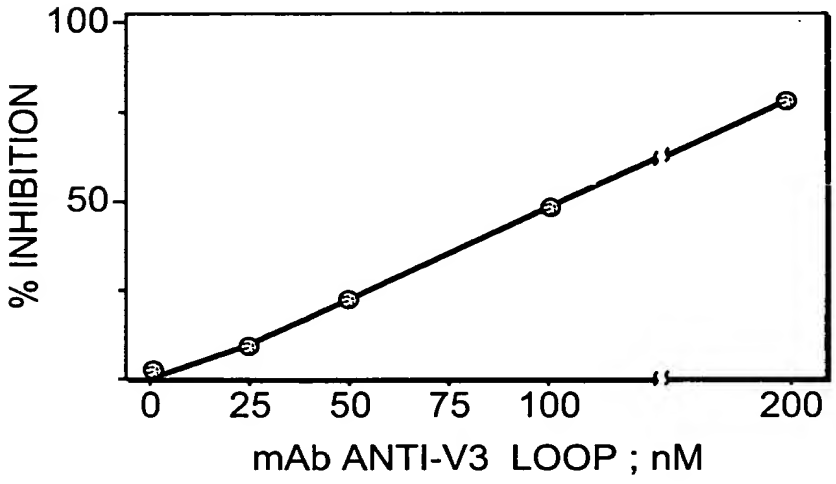


FIG. 19

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

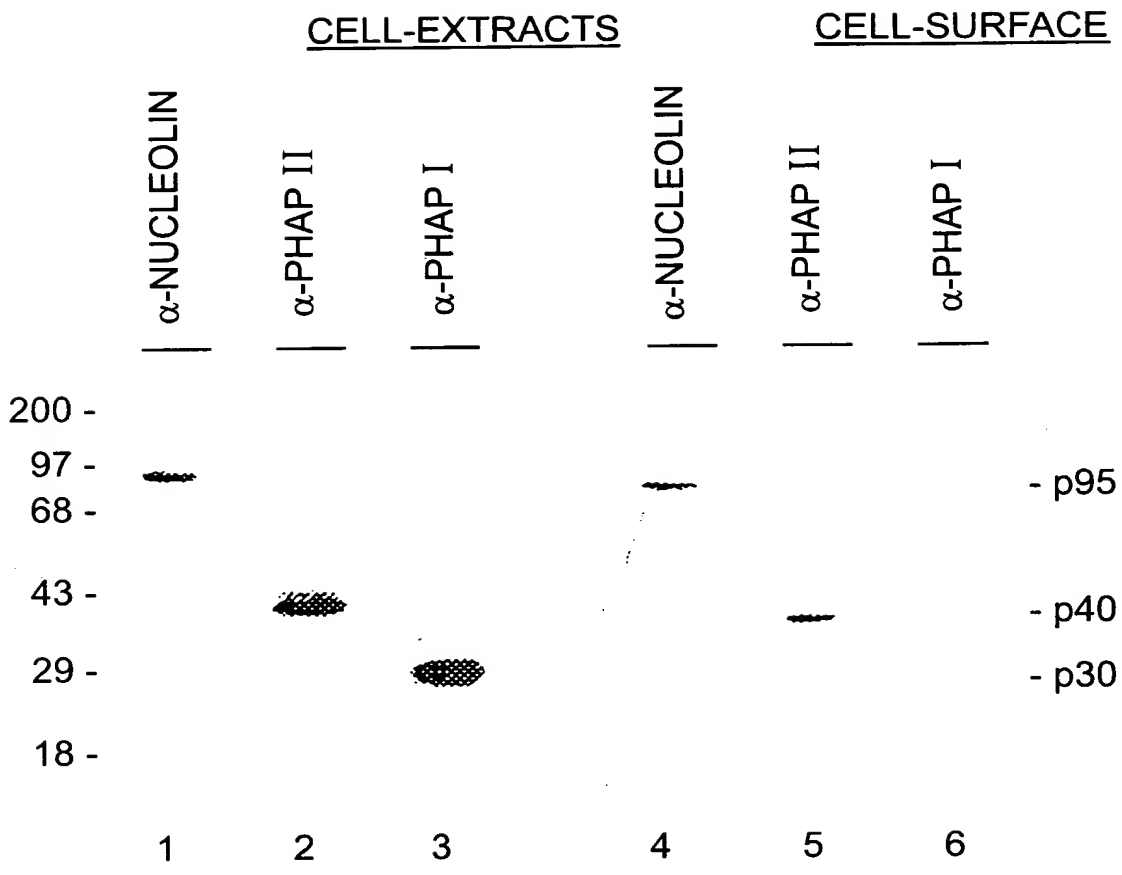


FIG. 20

OIPE JC1700
OCT 16 2002
PATENT & TRADEMARK OFFICE

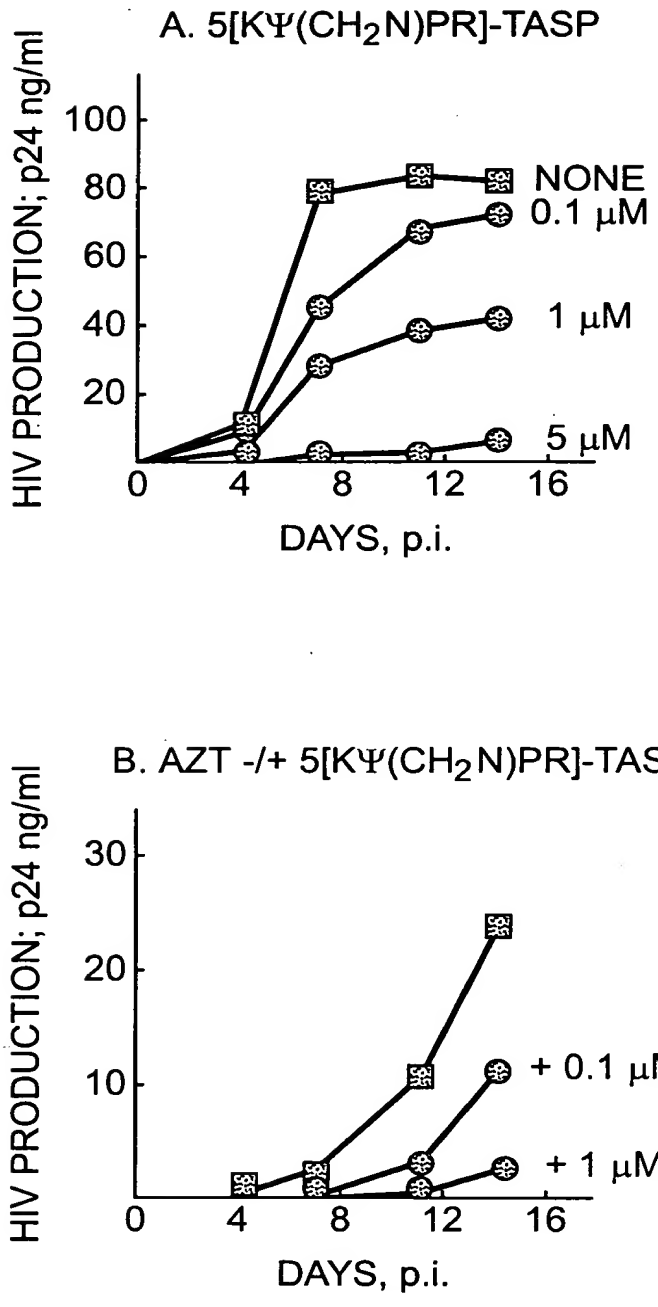


FIG. 21

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

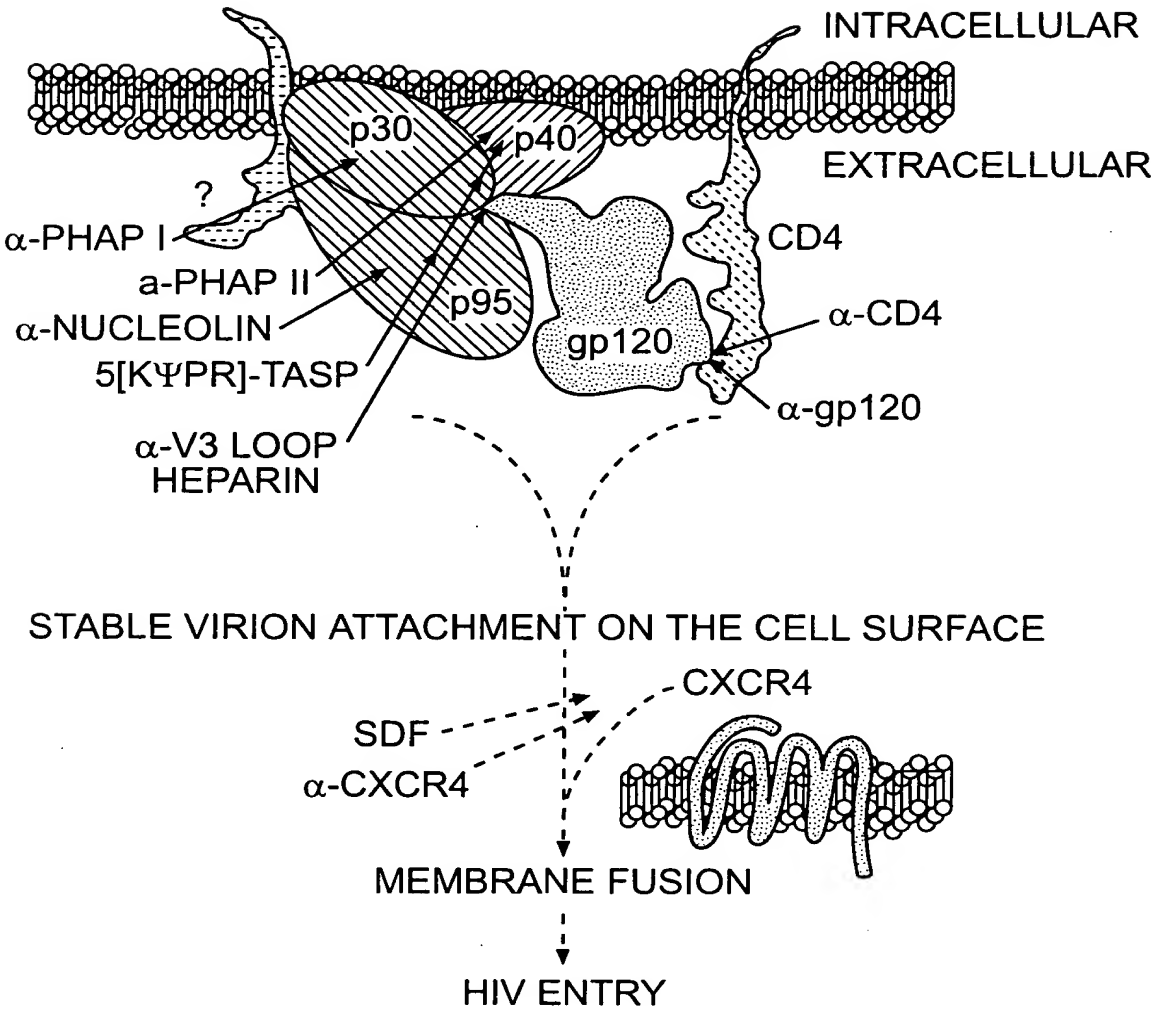


FIG. 22

OIPE JC100
OCT 16 2002
PATENT & TRADEMARK OFFICE

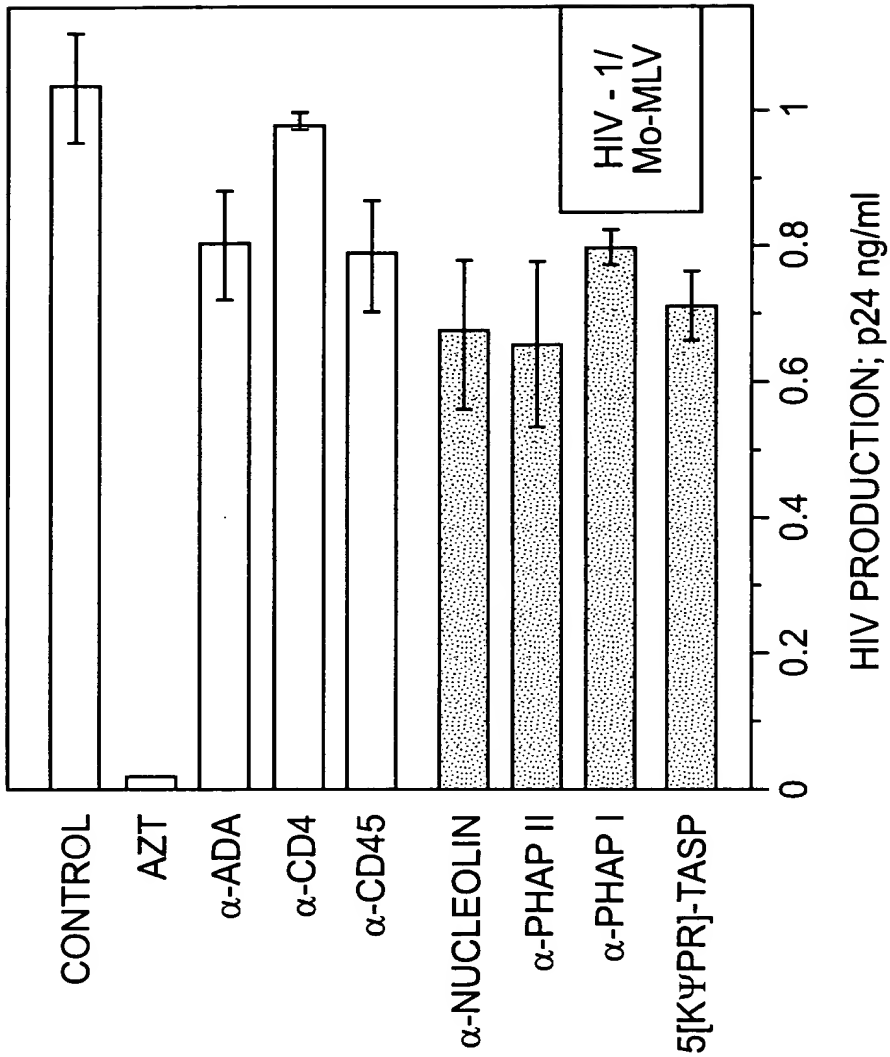


FIG. 23

CIPE JC100
OCT 16 2002
PATENT & TRADEMARK OFFICE

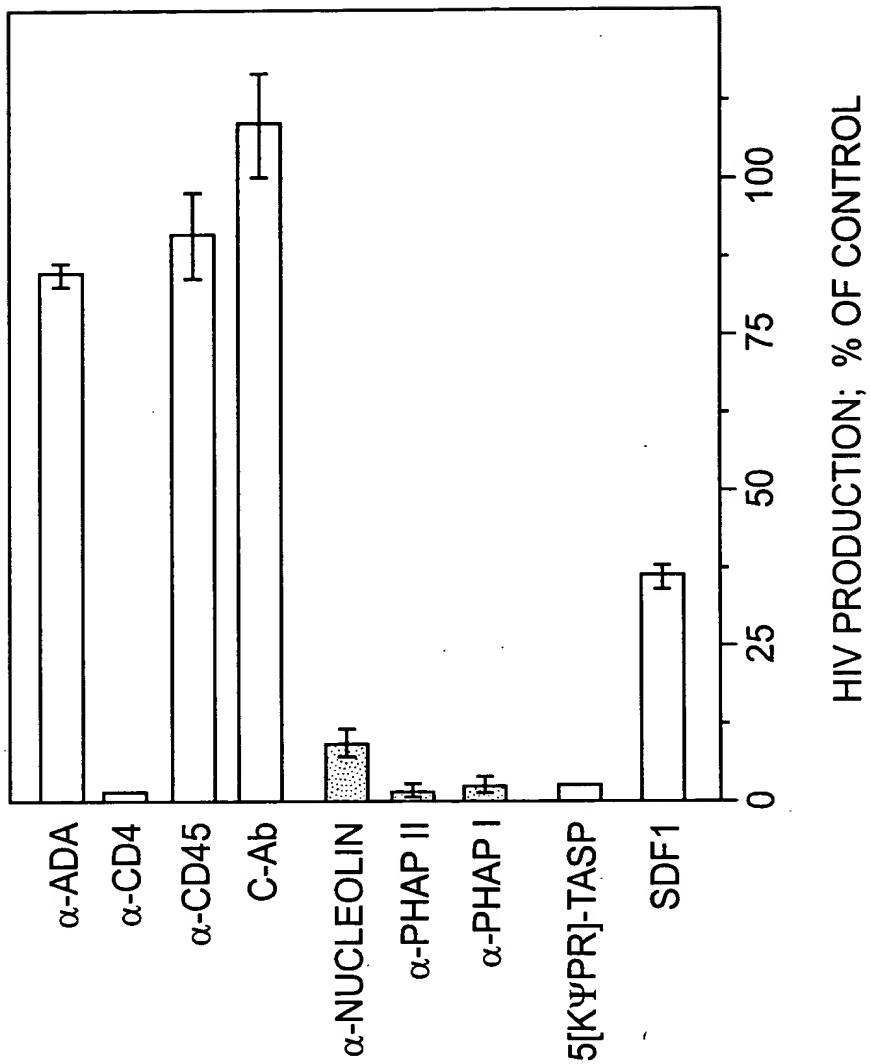


FIG. 24

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

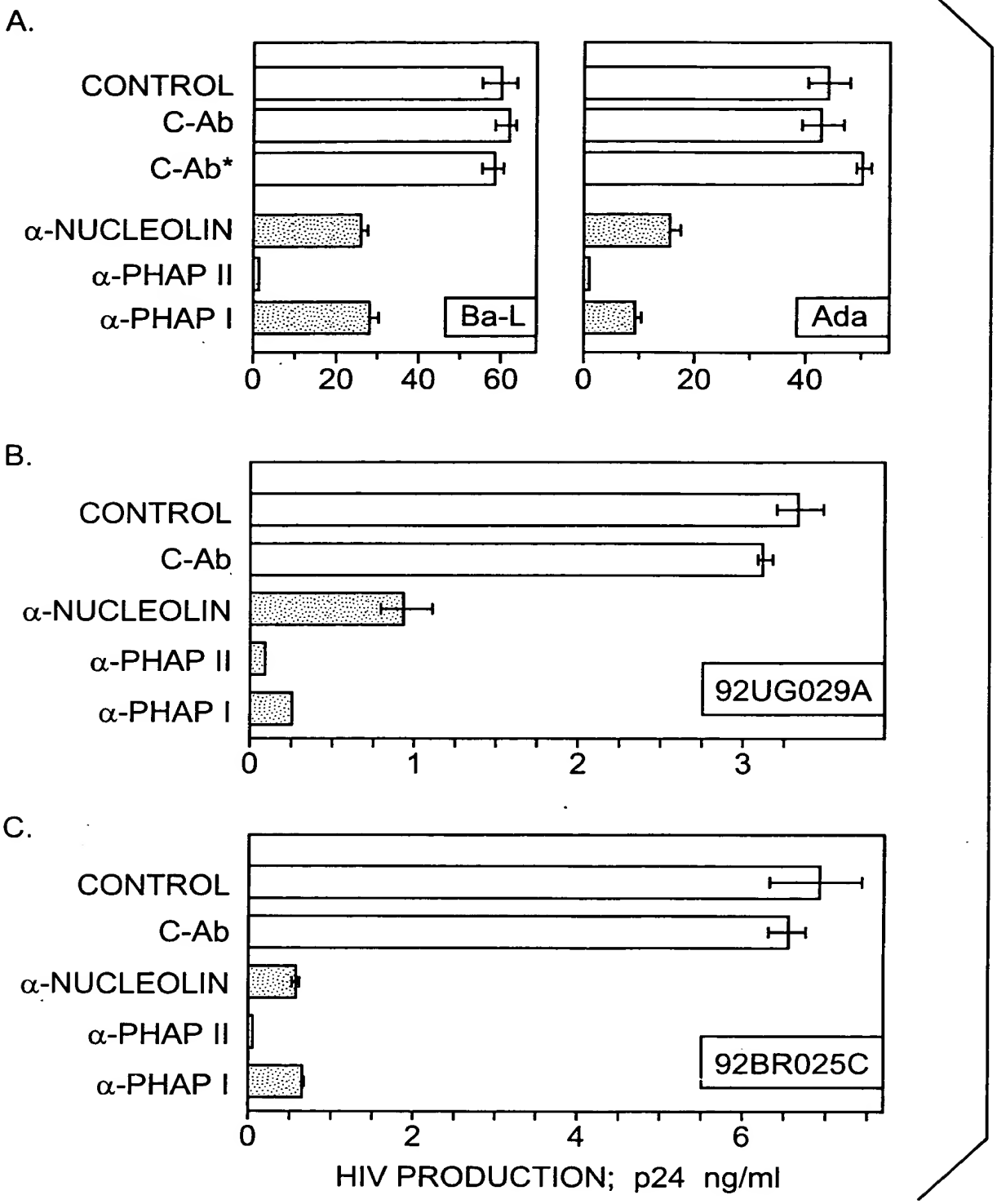


FIG. 25

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

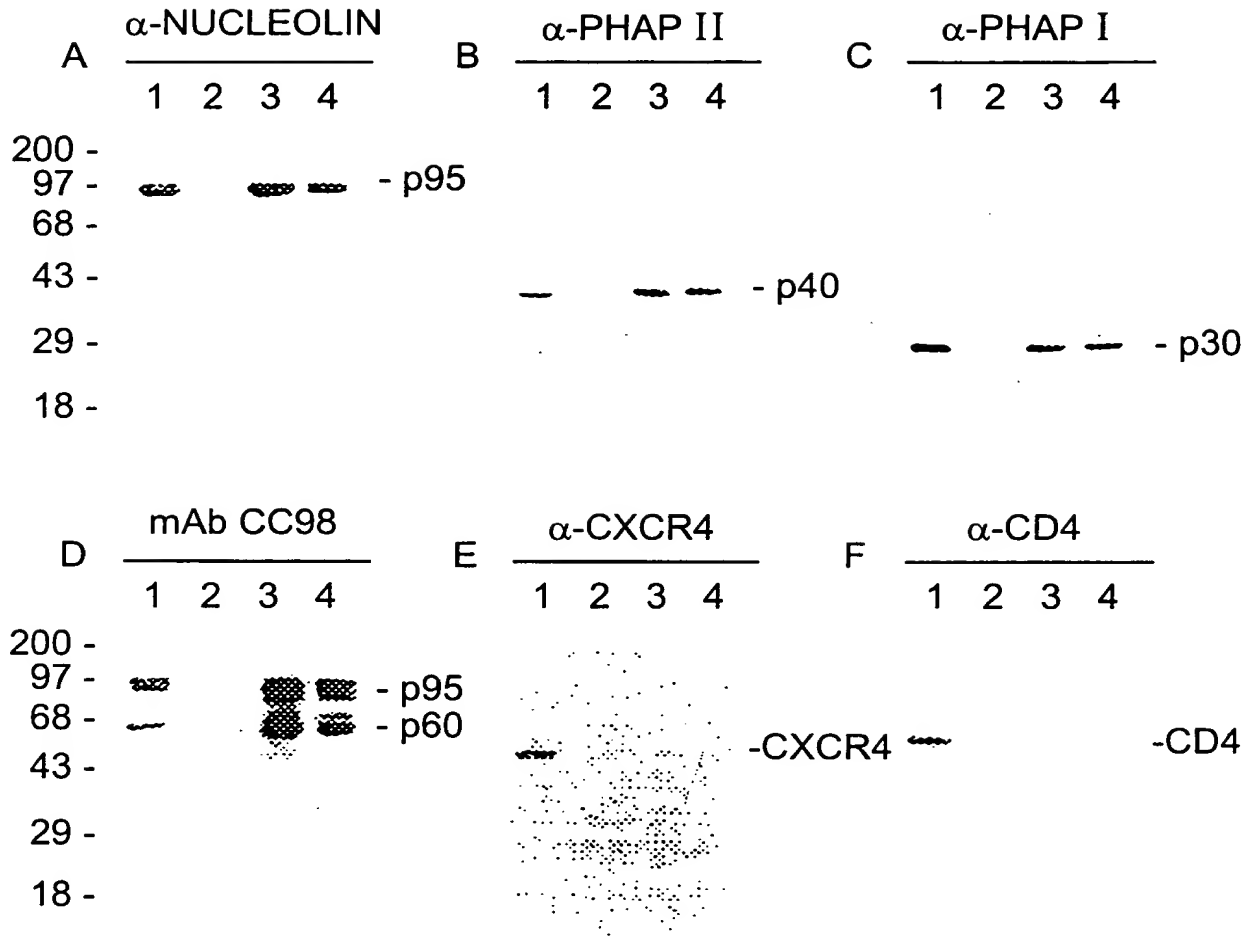


FIG. 26

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

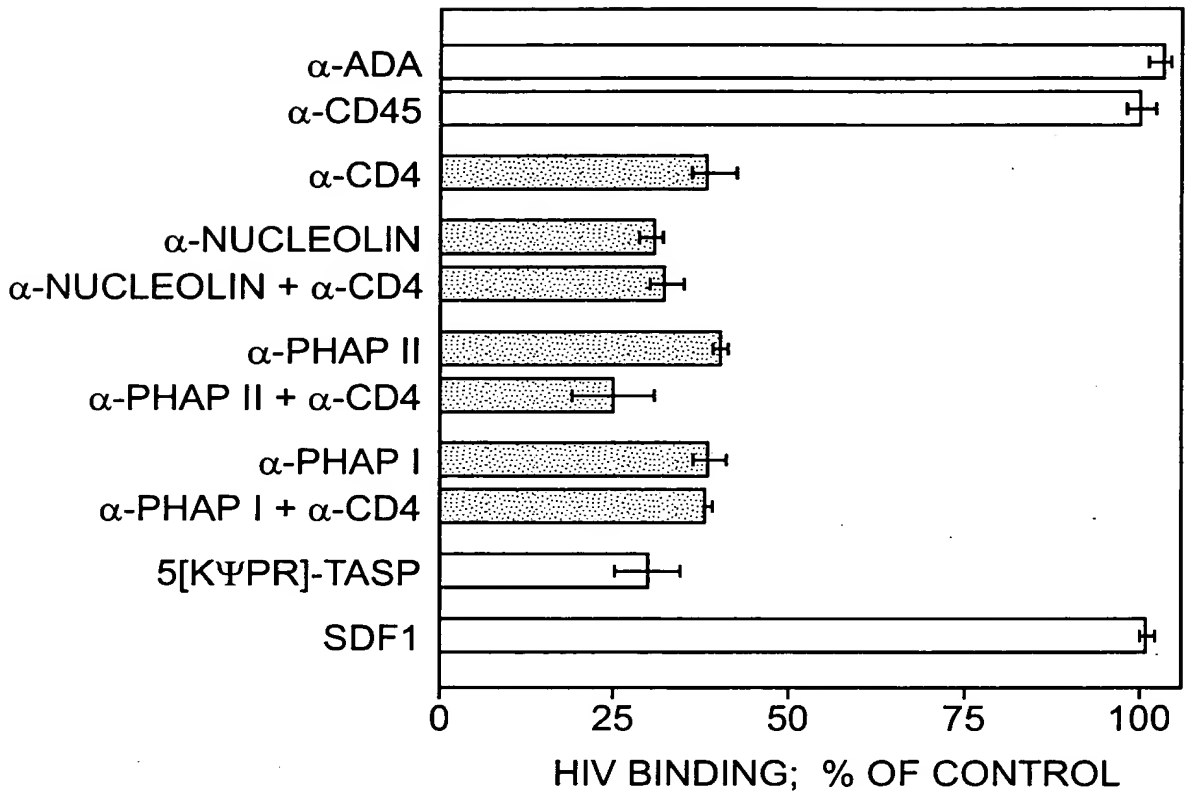


FIG. 27

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

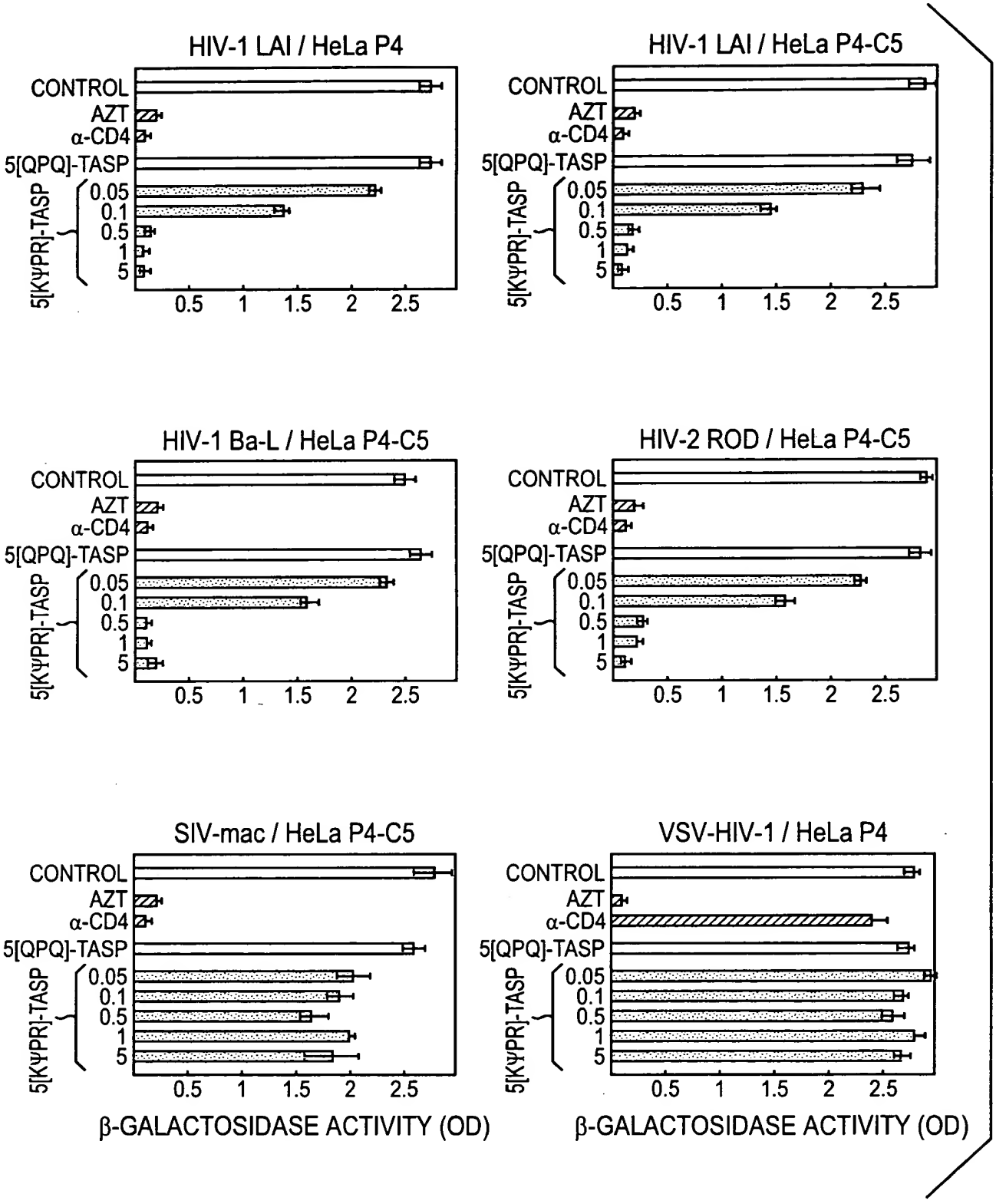


FIG. 28

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE
08/10/05

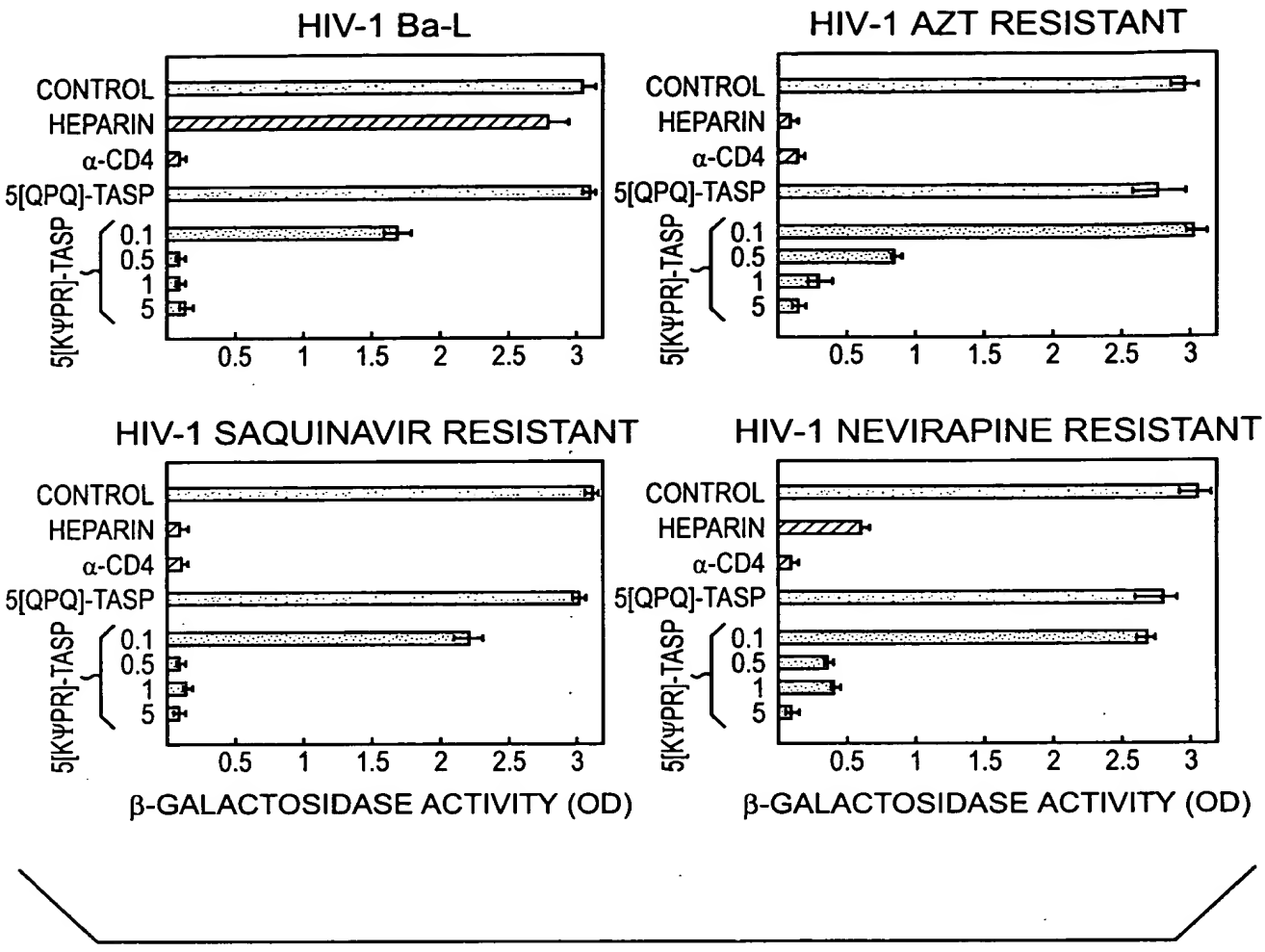


FIG. 29

OIPE JC100
OCT 16 2002
PATENT & TRADEMARK OFFICE

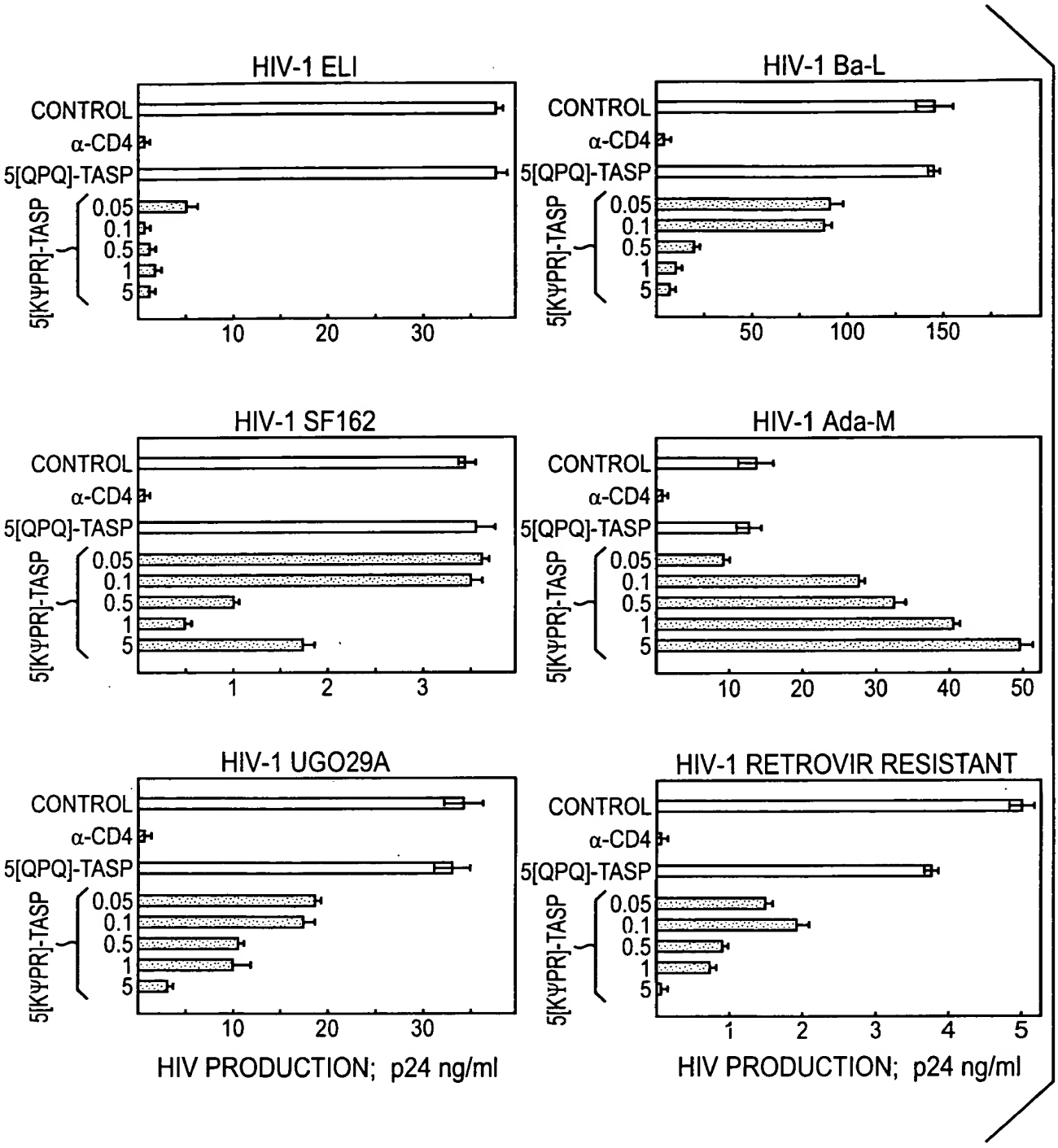


FIG. 30

PATENT & TRADEMARK OFFICE
OCT 16 2002
OIPE
JC:180

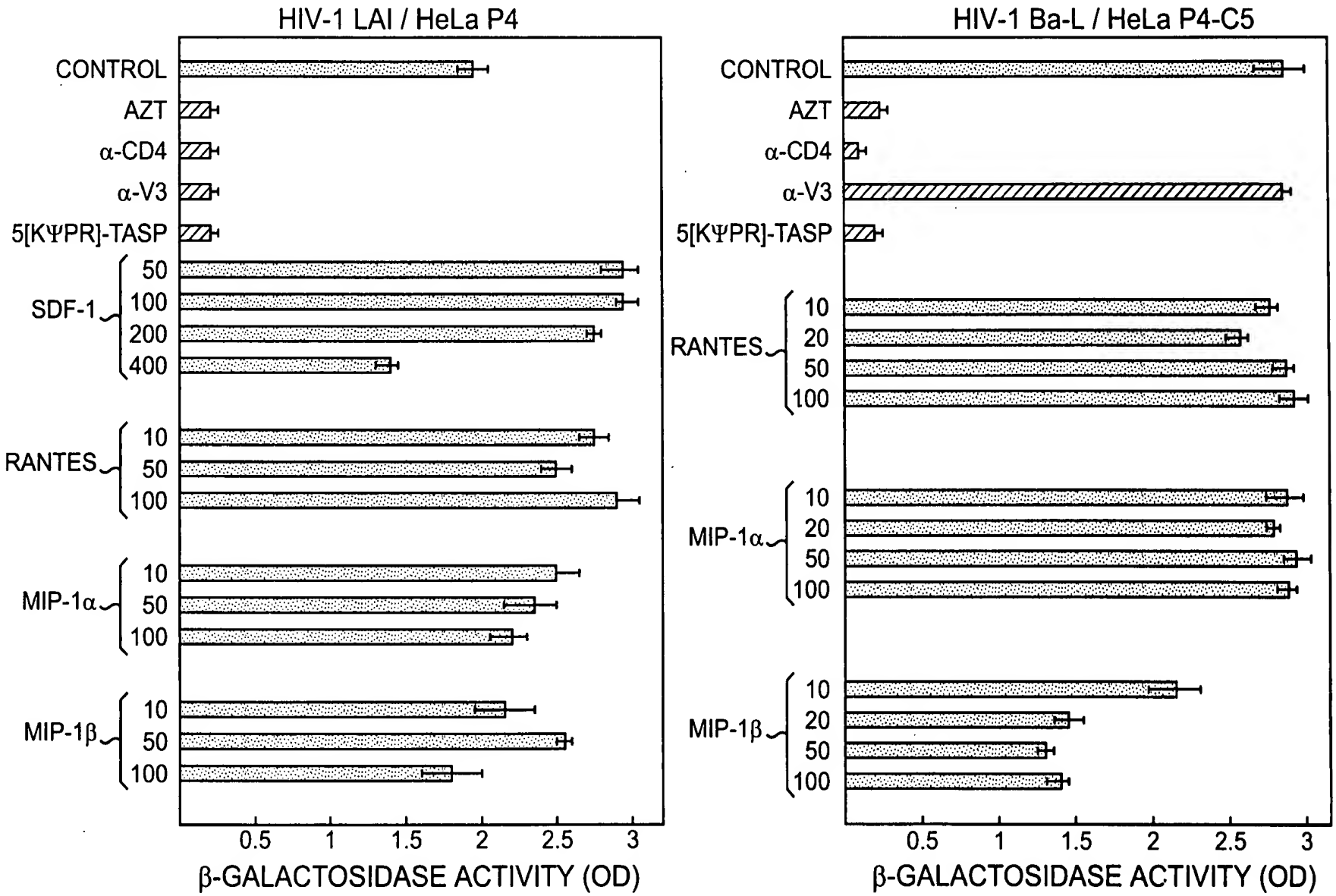


FIG. 31

O.I.P.E
JC100
OCT 16 2002
PATENT & TRADEMARK OFFICE

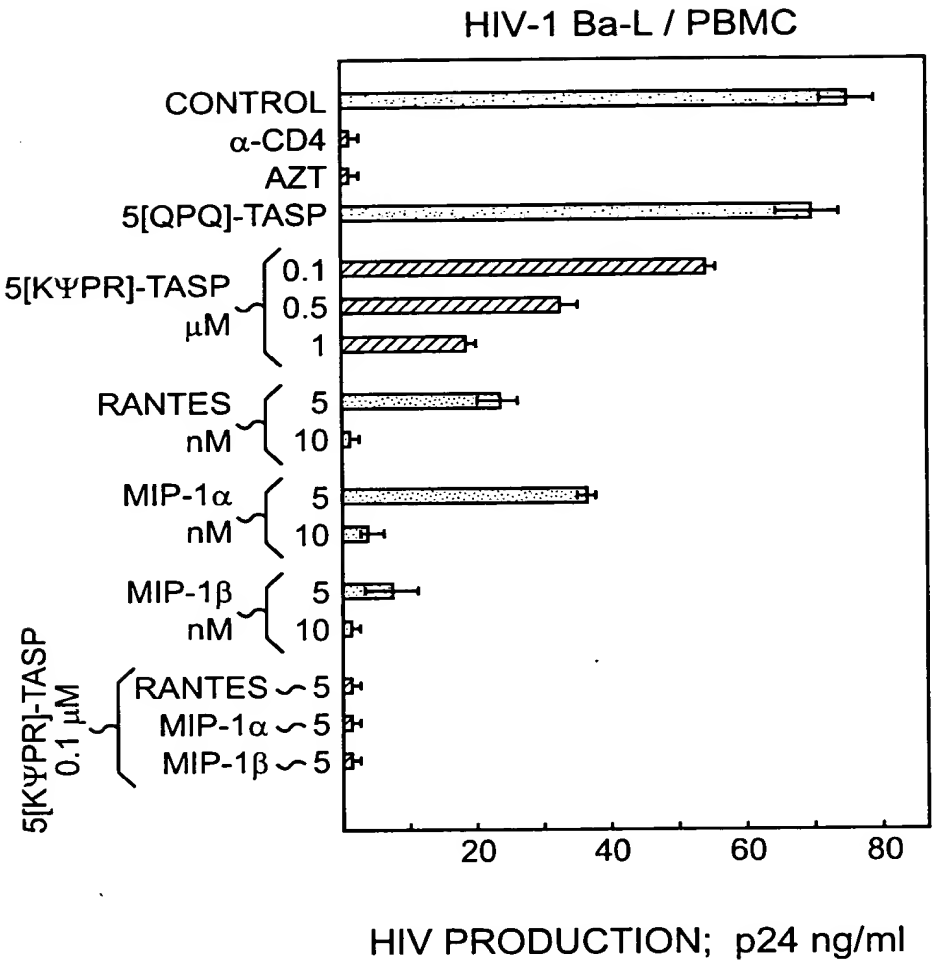


FIG. 32

OIPE JC:20
OCT 16 2002
PATENT & TRADEMARK OFFICE

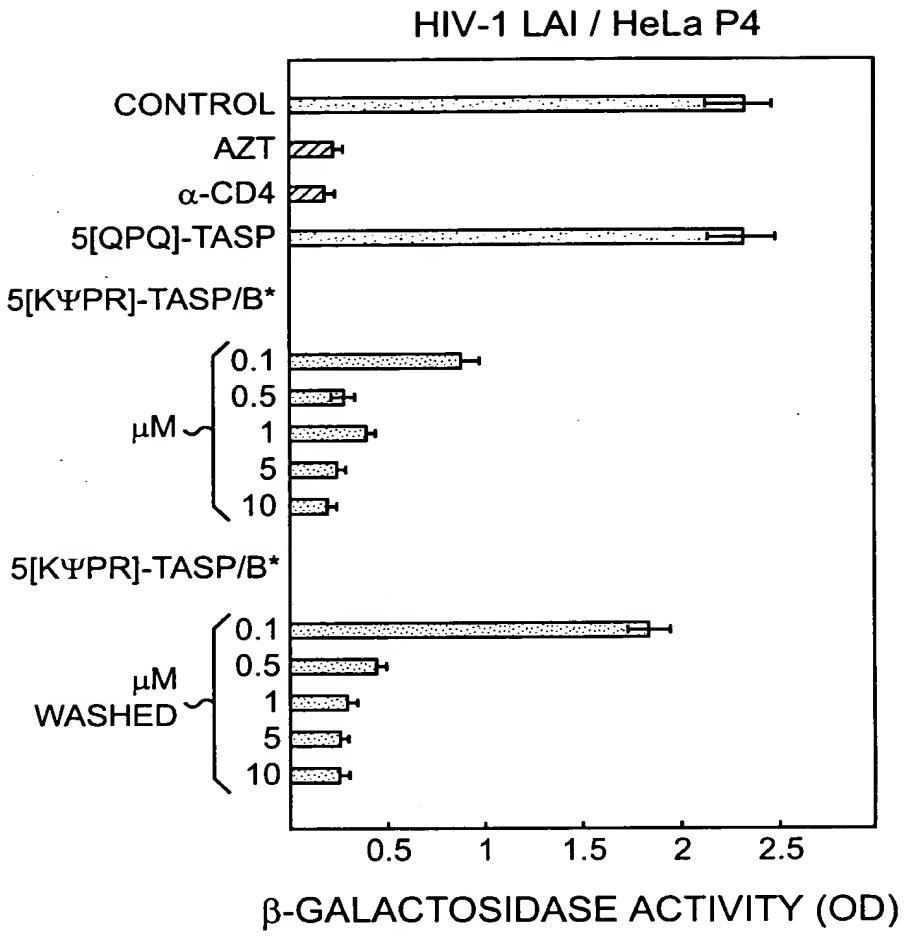


FIG. 33

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

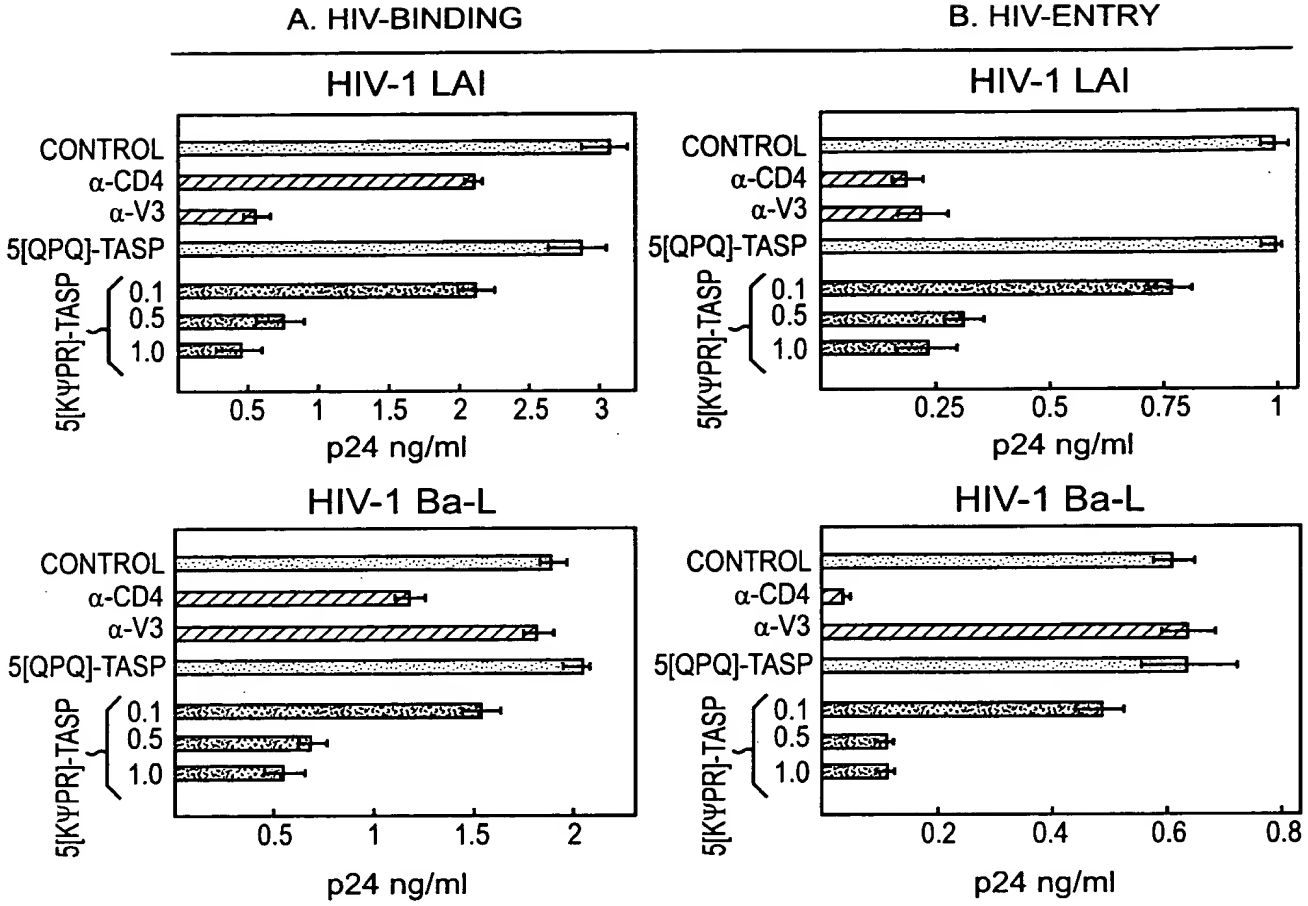


FIG. 34

O.I.P.E
OCT 16 2002
PATENT & TRADEMARK OFFICE

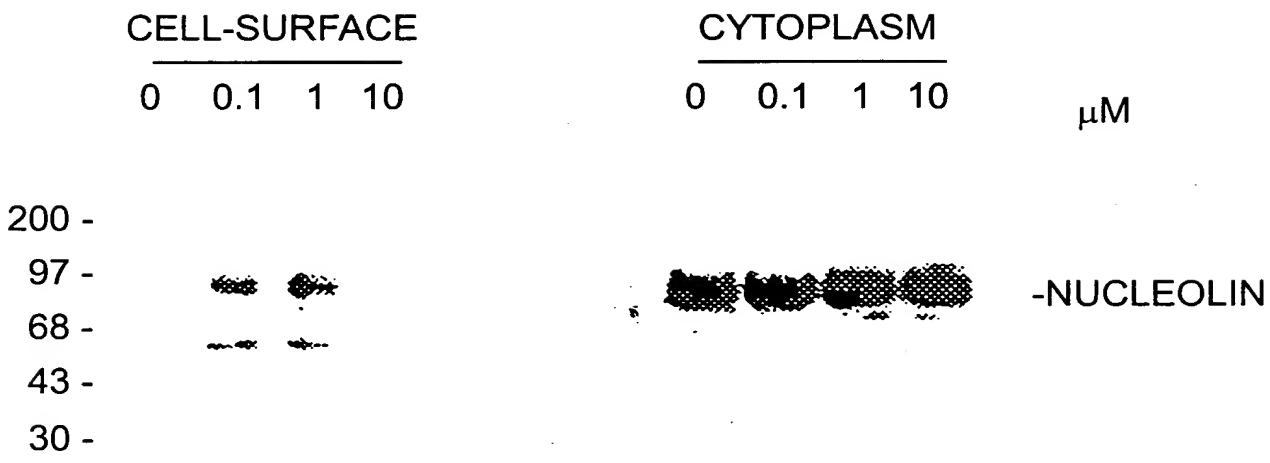
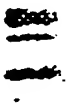


FIG. 35

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE
JC180

CELL-SURFACE

1 2 3 4



-NUCLEOLIN (p95)

1: 1hr; 2: 1hr; 3: 6hr; 4: 24hr;
2, 3, 4: 5μM

FIG. 36

OIPE JC100
OCT 16 2002
PATENT & TRADEMARK OFFICE

THE EFFECT OF HEPARIN AT µg/ml ON HIV INFECTION IN HeLa P4-C5 CELLS.

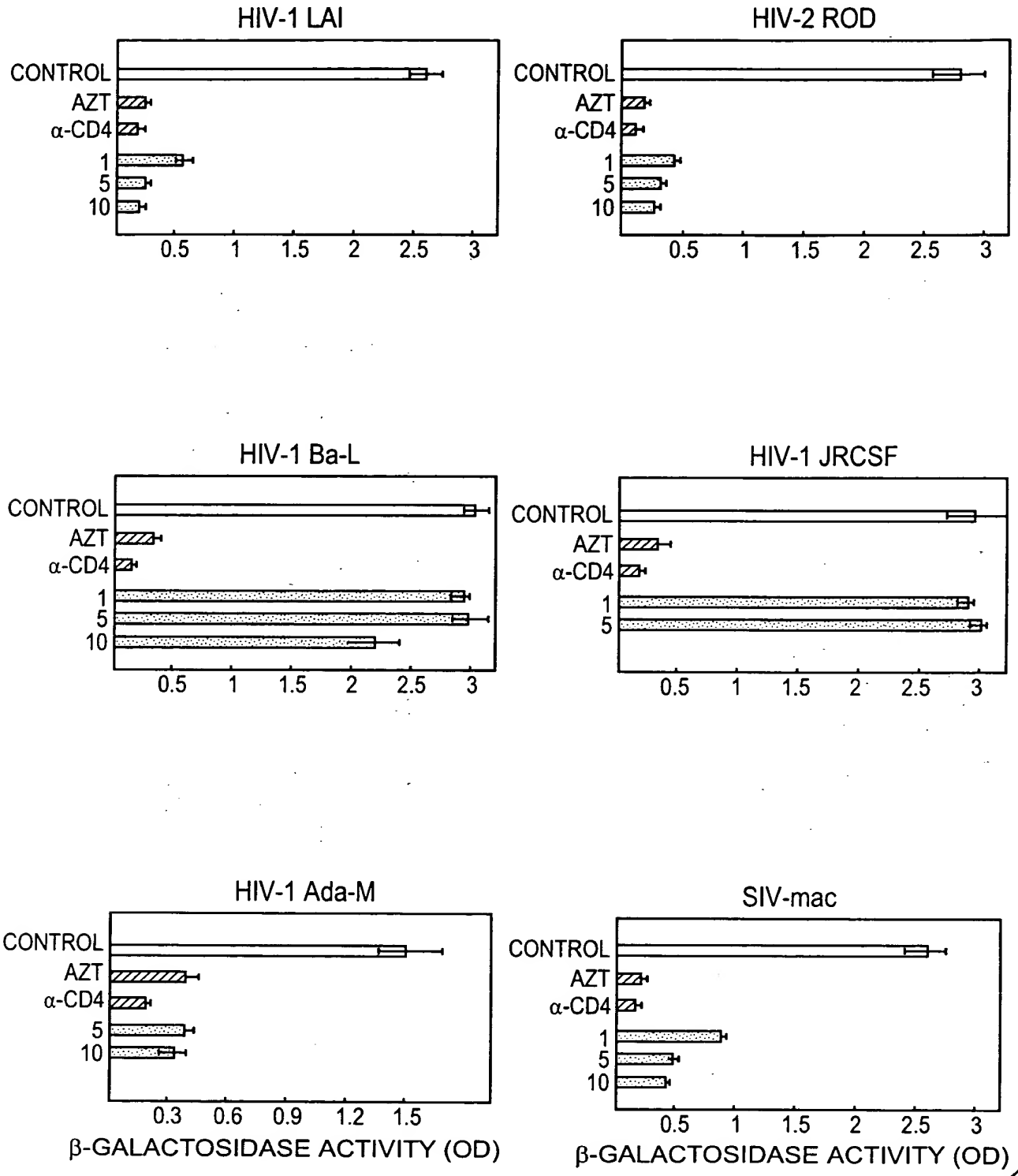


FIG. 37

OIPE JC1180
OCT 16 2002
PATENT & TRADEMARK OFFICE

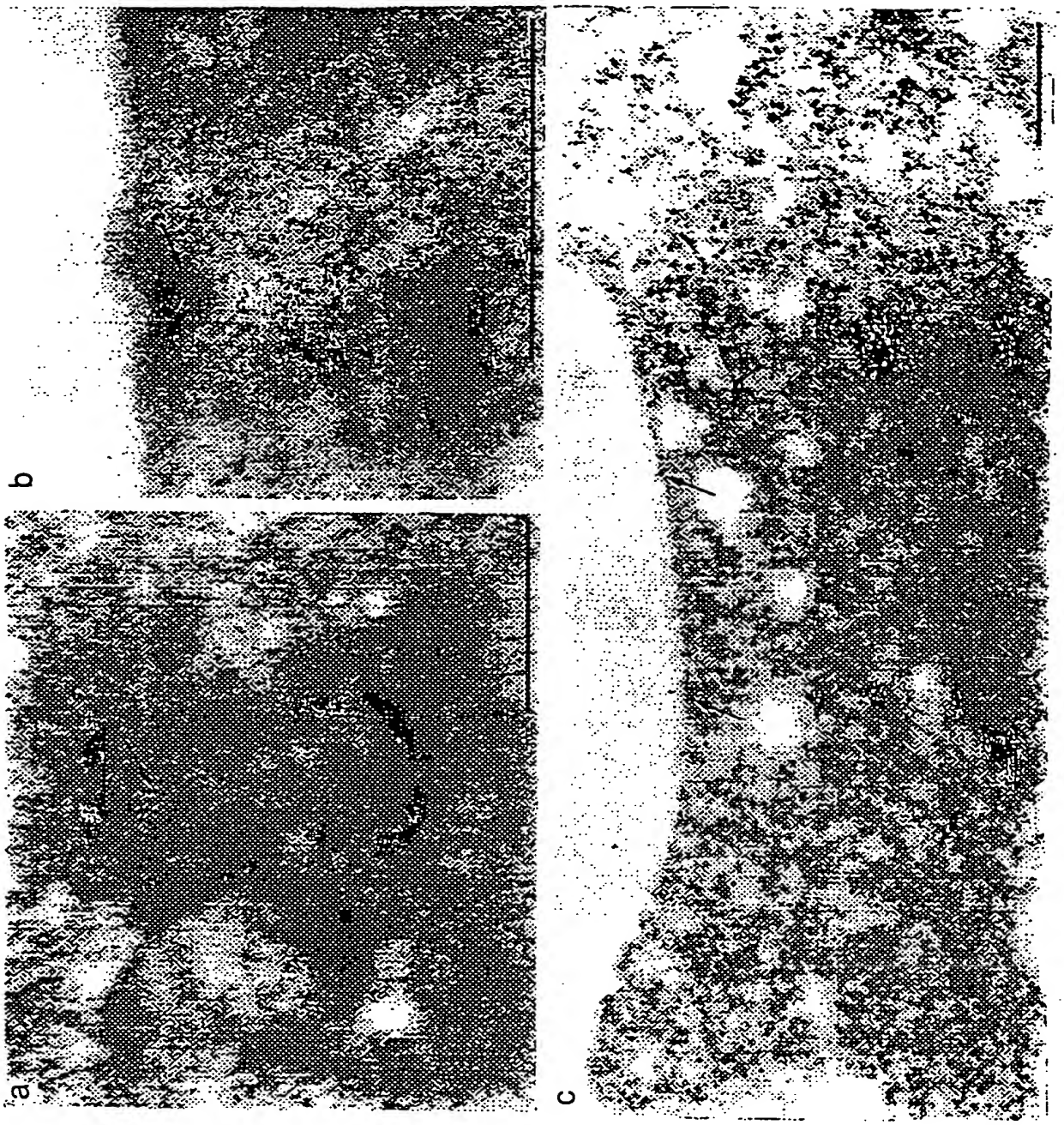


FIG. 38

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE

FIG. 39

OIPE
OCT 16 2002
PATENT & TRADEMARK OFFICE
JC10

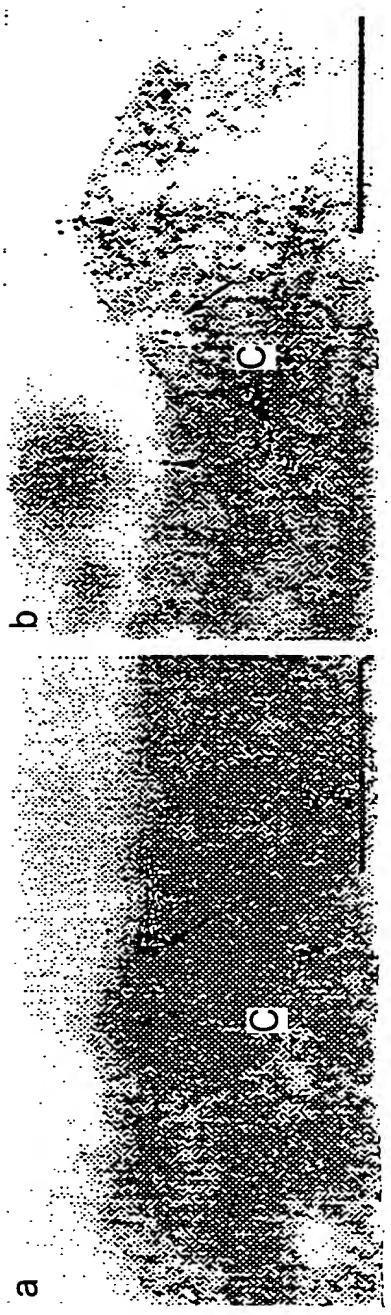


FIG. 40A

OIPE JC100
OCT 16 2002
PATENT & TRADEMARK OFFICE

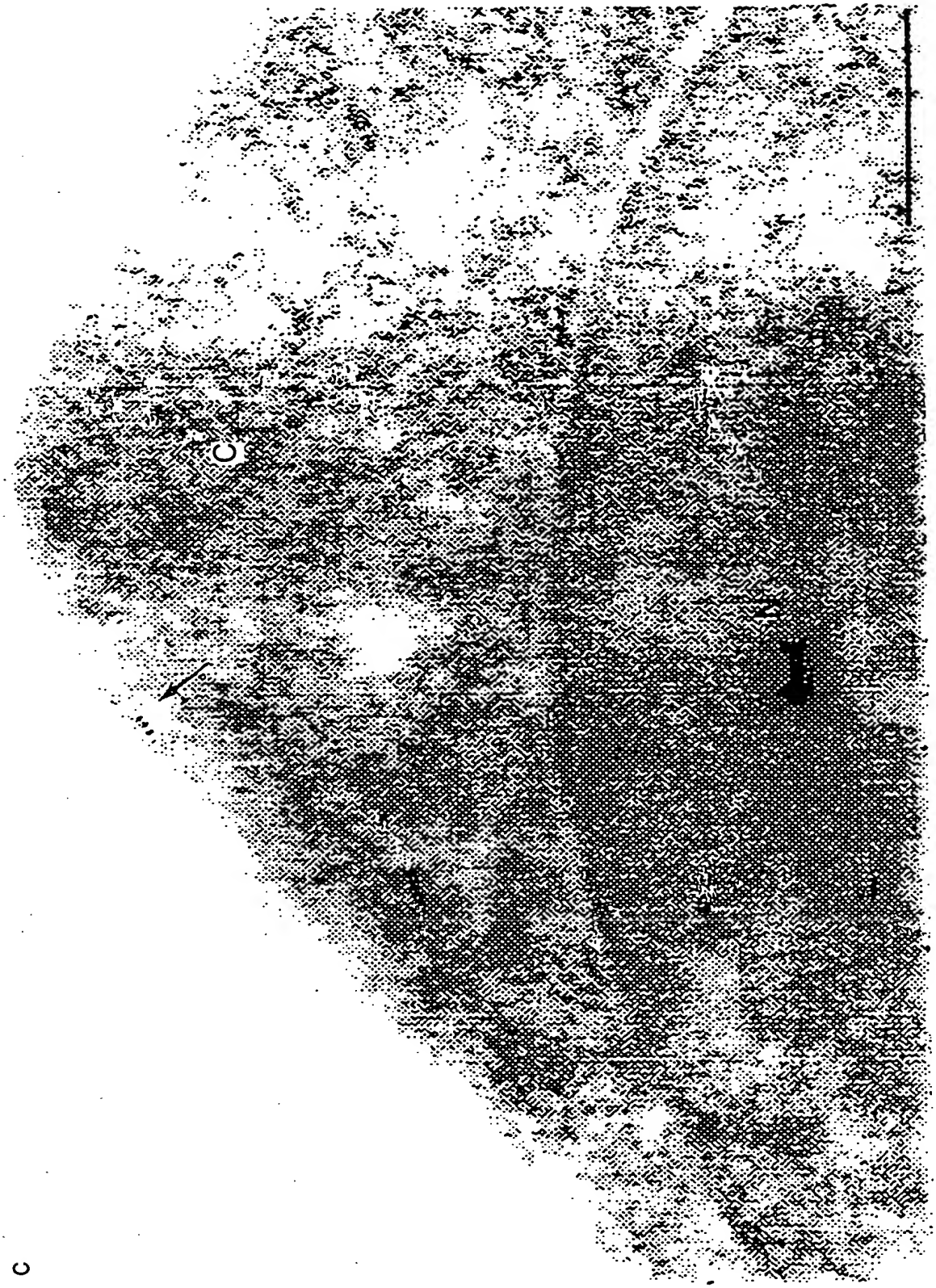


FIG. 40B

OIPE JC10
OCT 16 2002
PATENT & TRADEMARK OFFICE

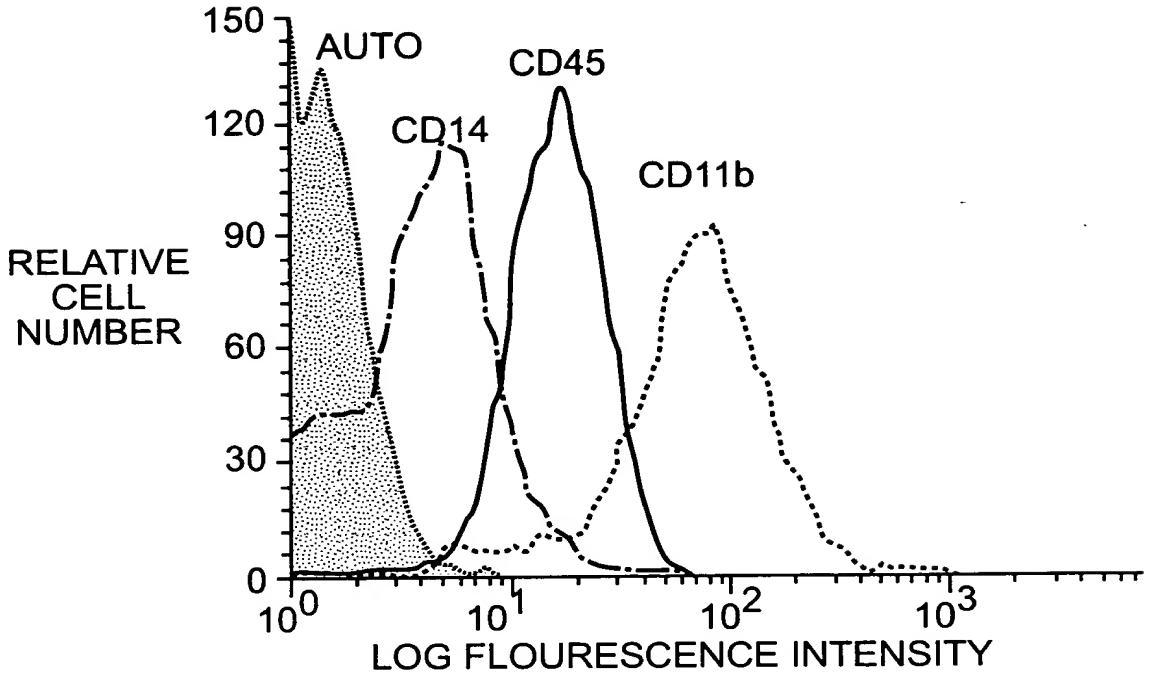


FIG. 41A

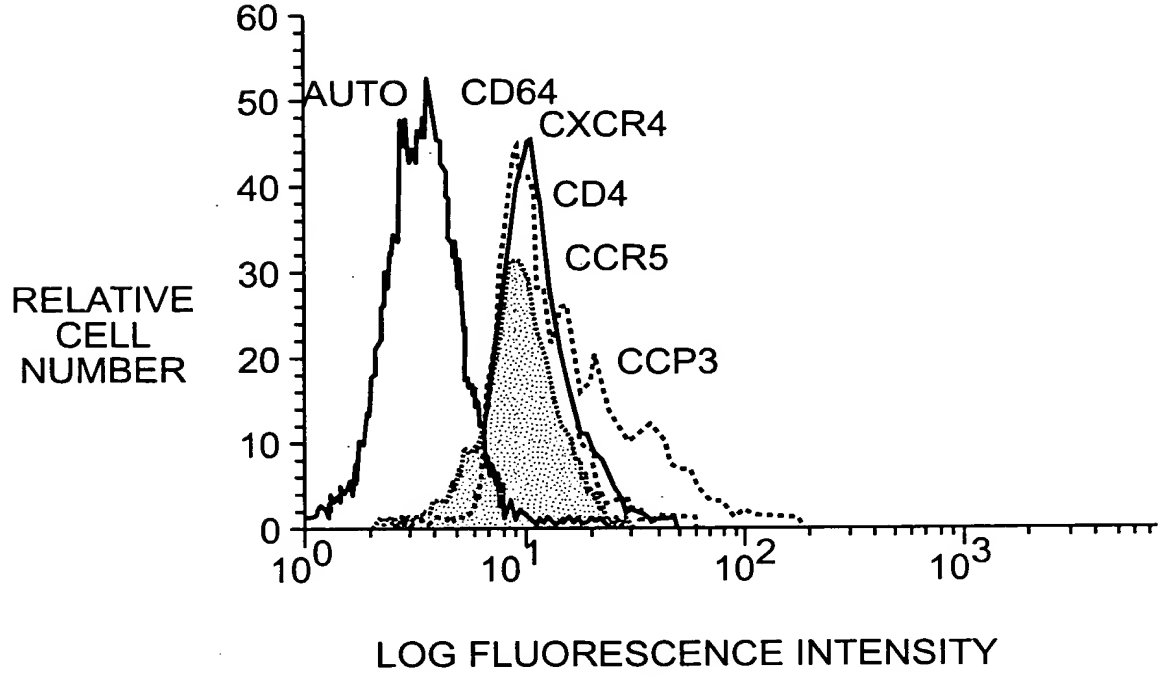


FIG. 41B

OIPE JC:100
OCT 16 2002
PATENT & TRADEMARK OFFICE

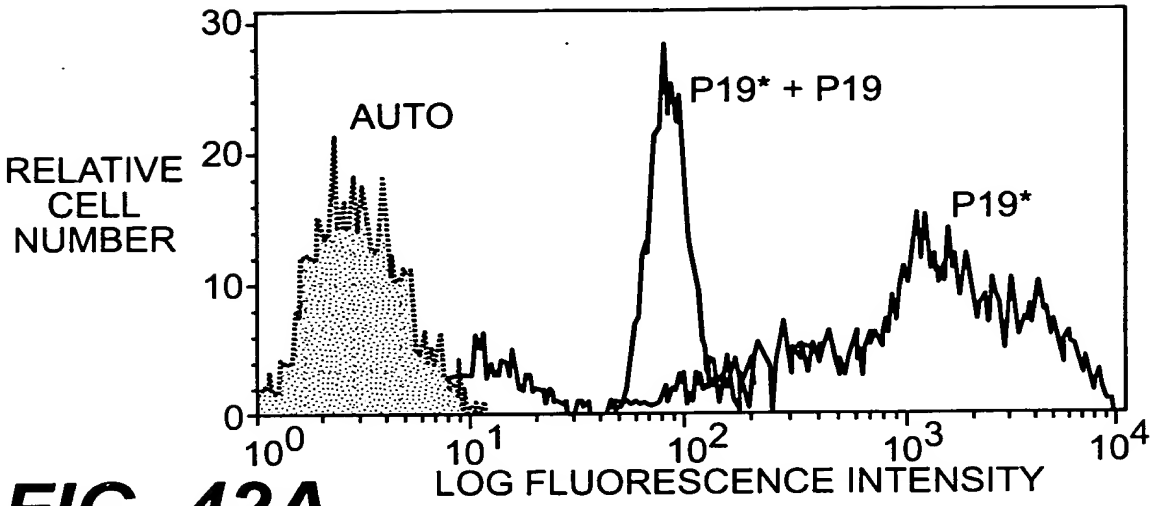


FIG. 42A

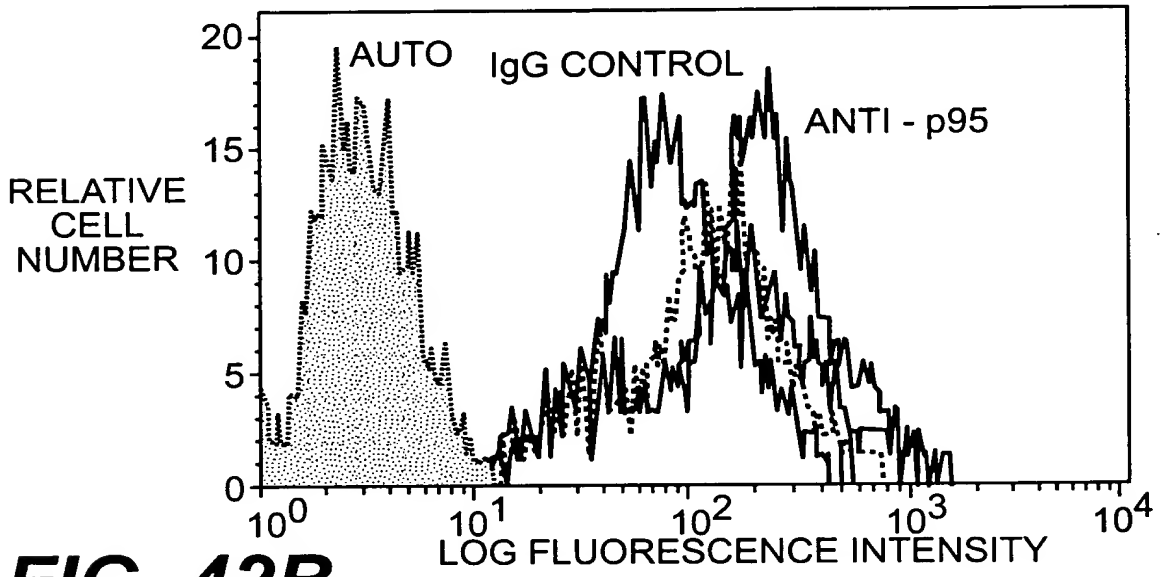


FIG. 42B

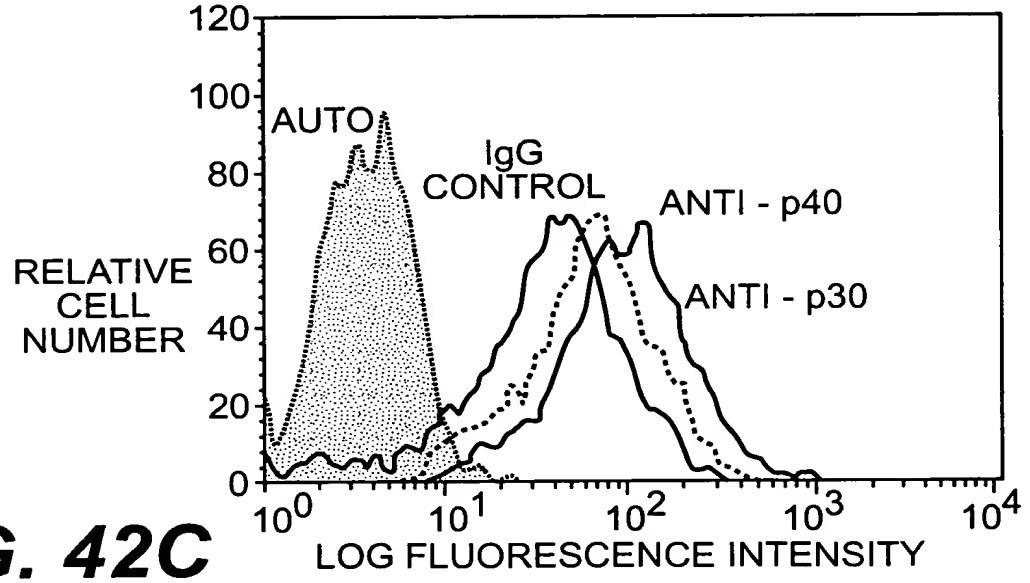


FIG. 42C

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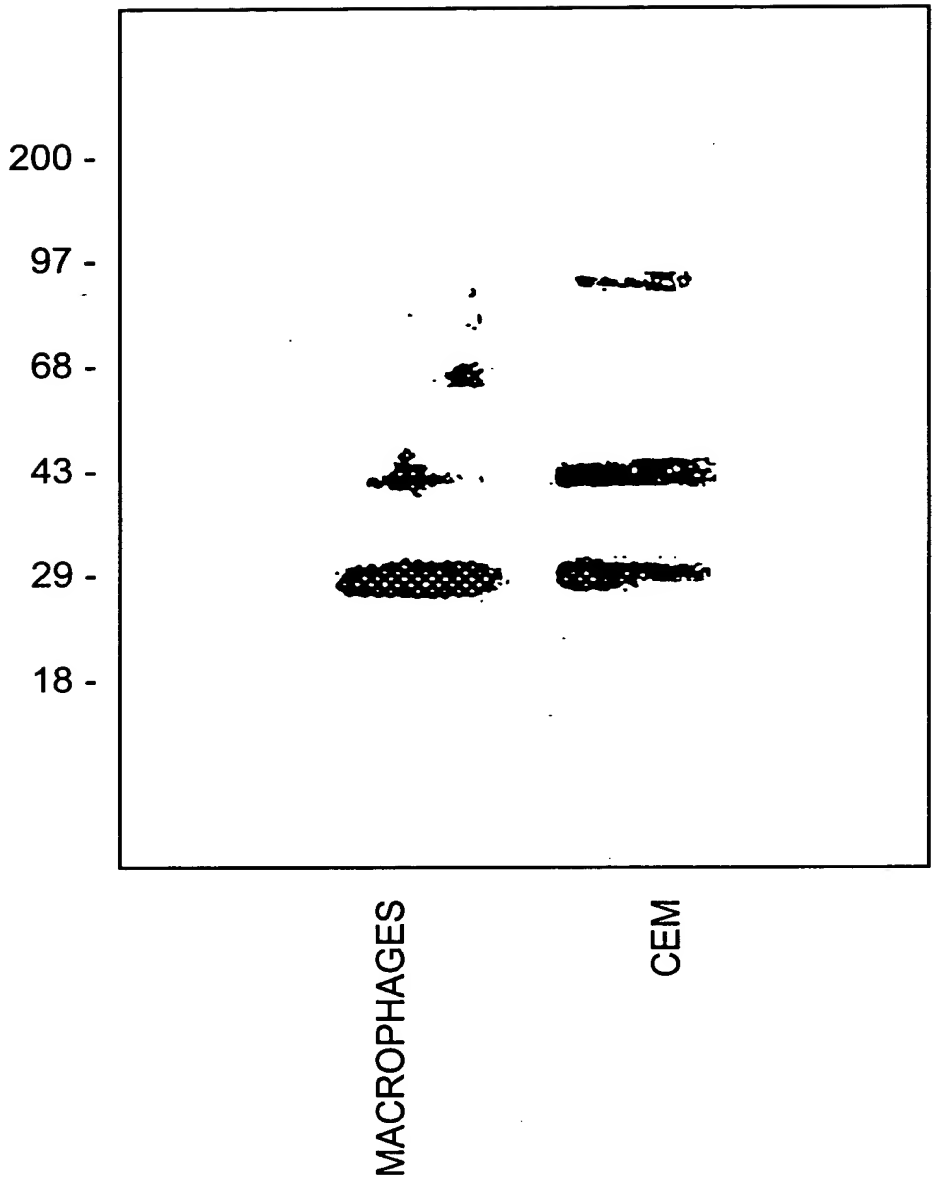

FIG. 43

OIPE JC1600
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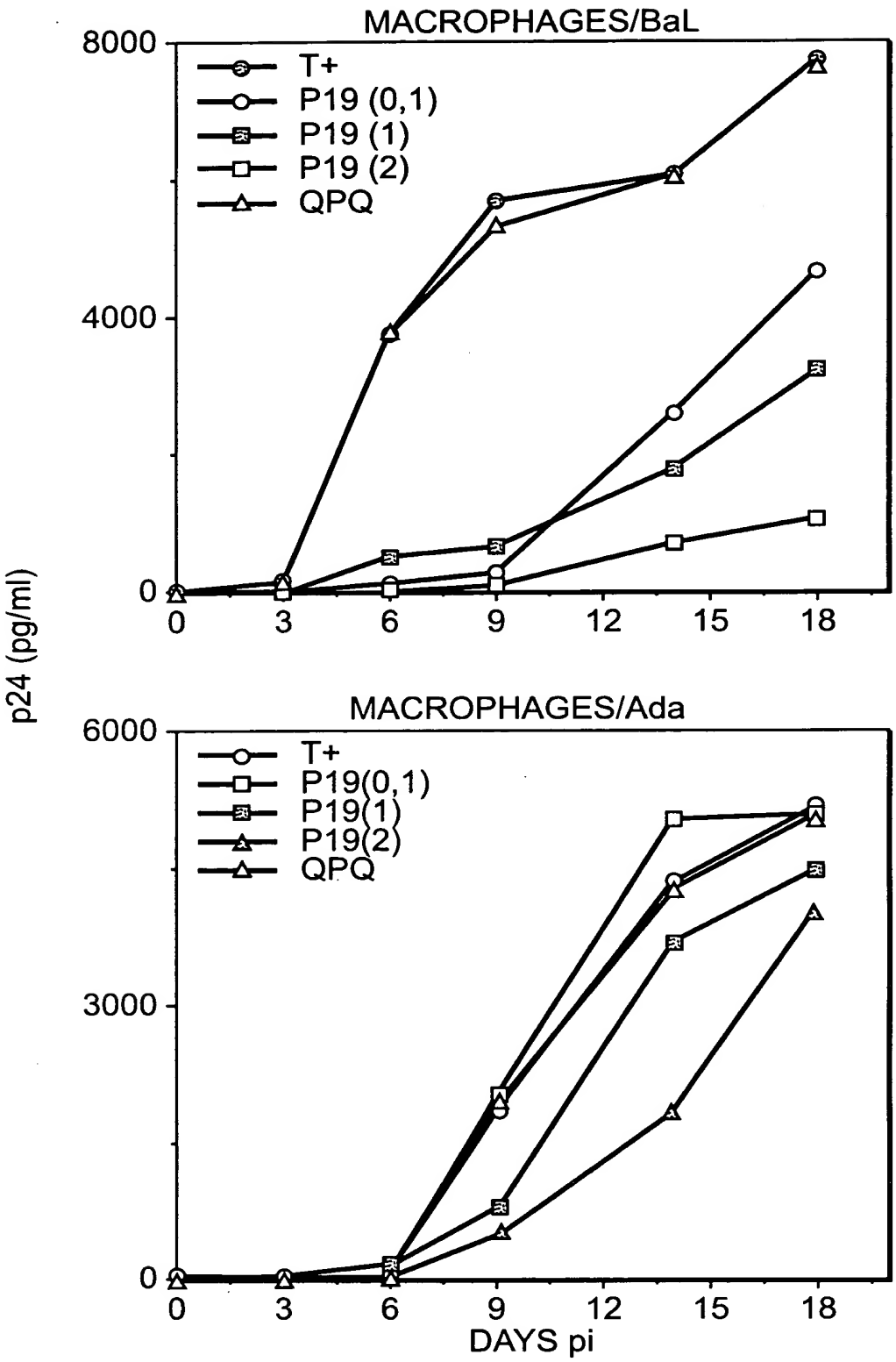

FIG. 44

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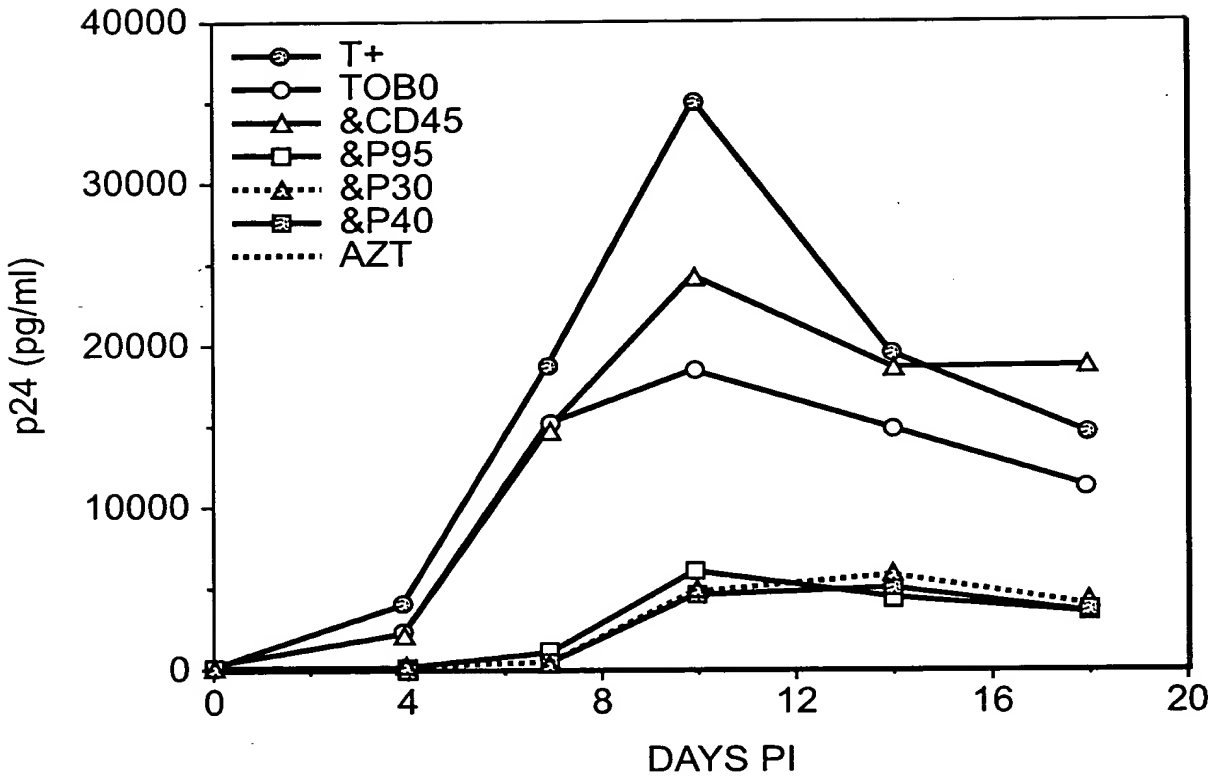

FIG. 45

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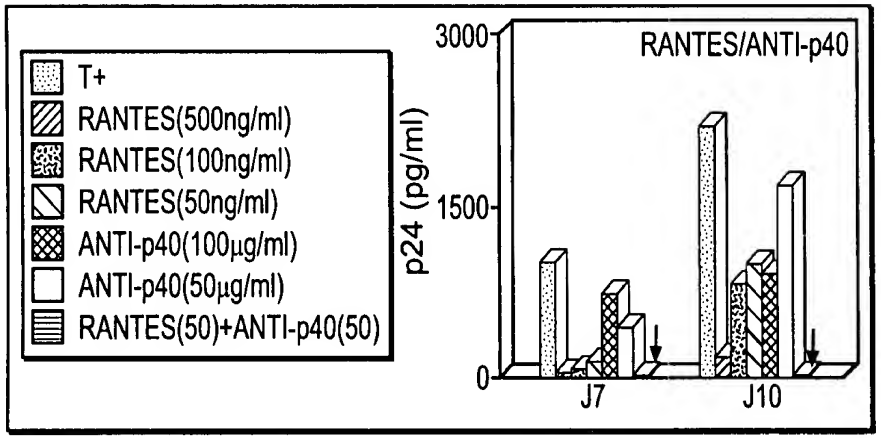

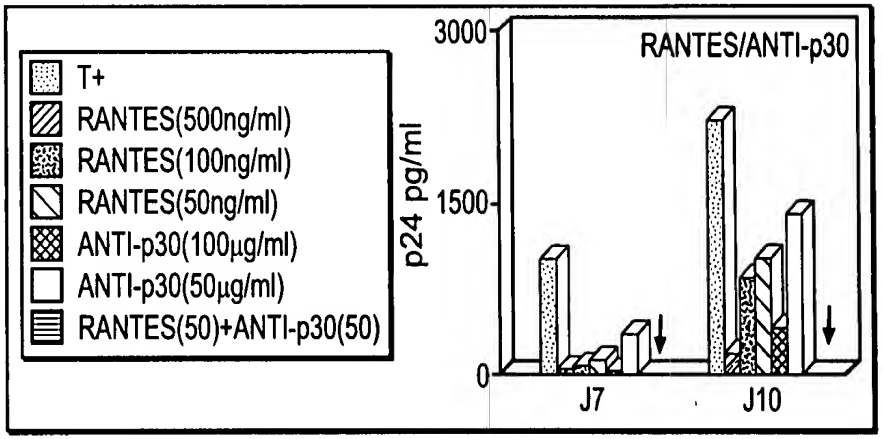

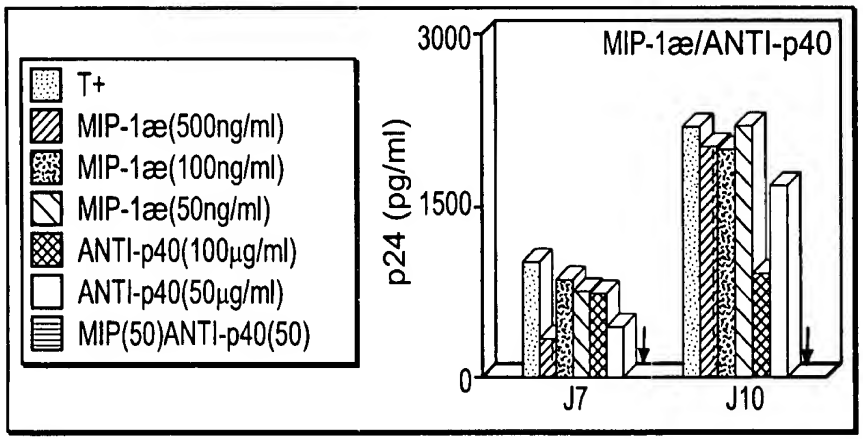

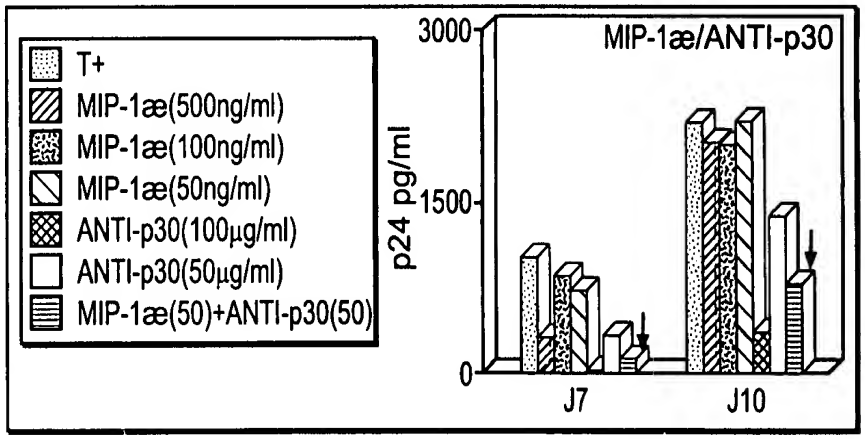

FIG. 46A

OIPE JC180
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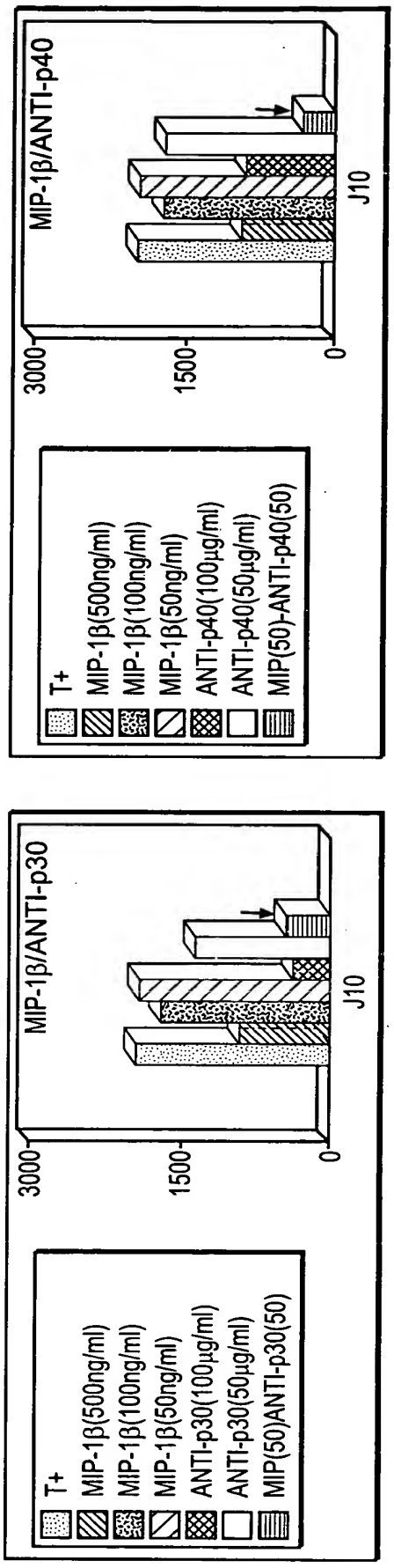

FIG. 46B

OIPE JC100
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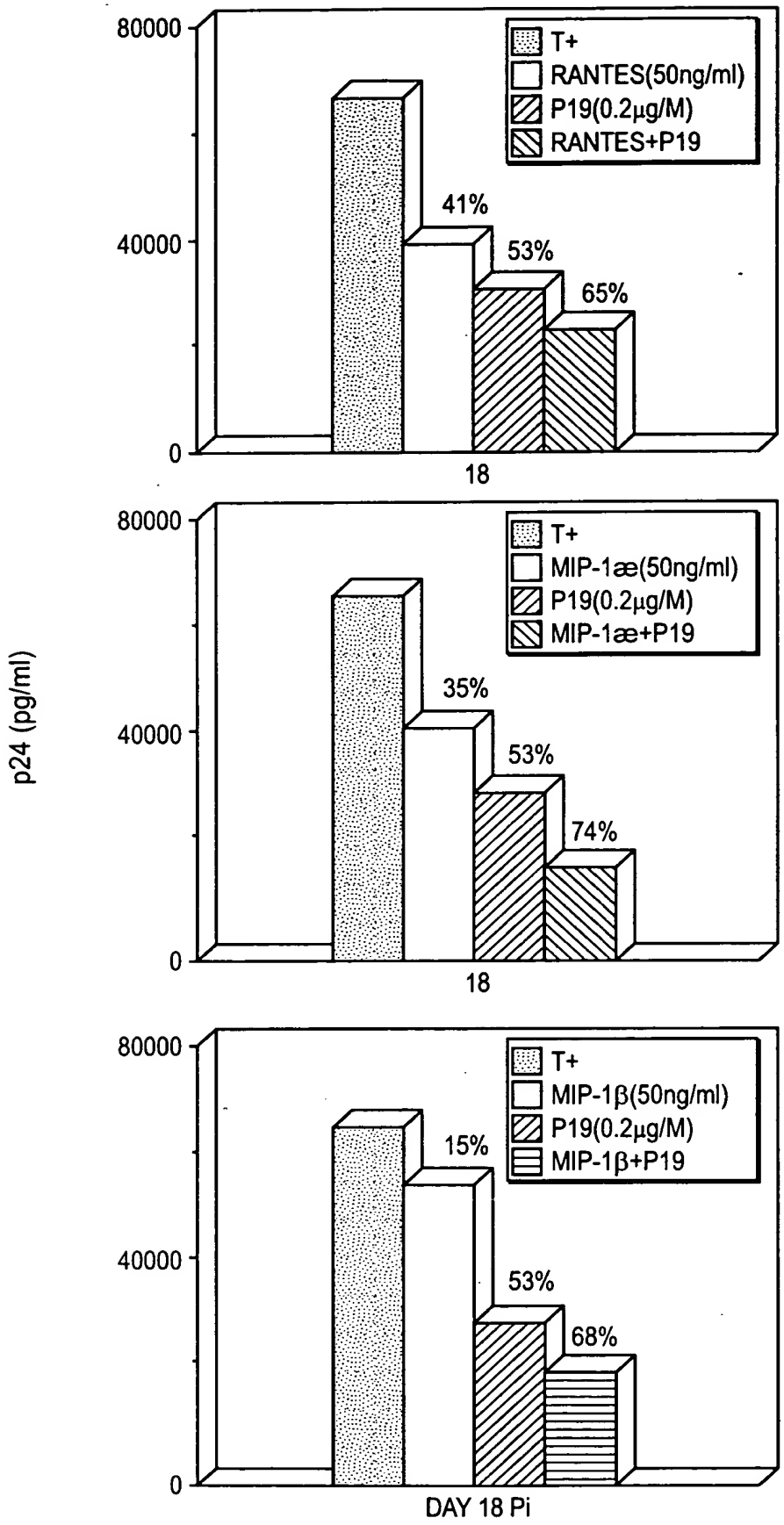

FIG. 47

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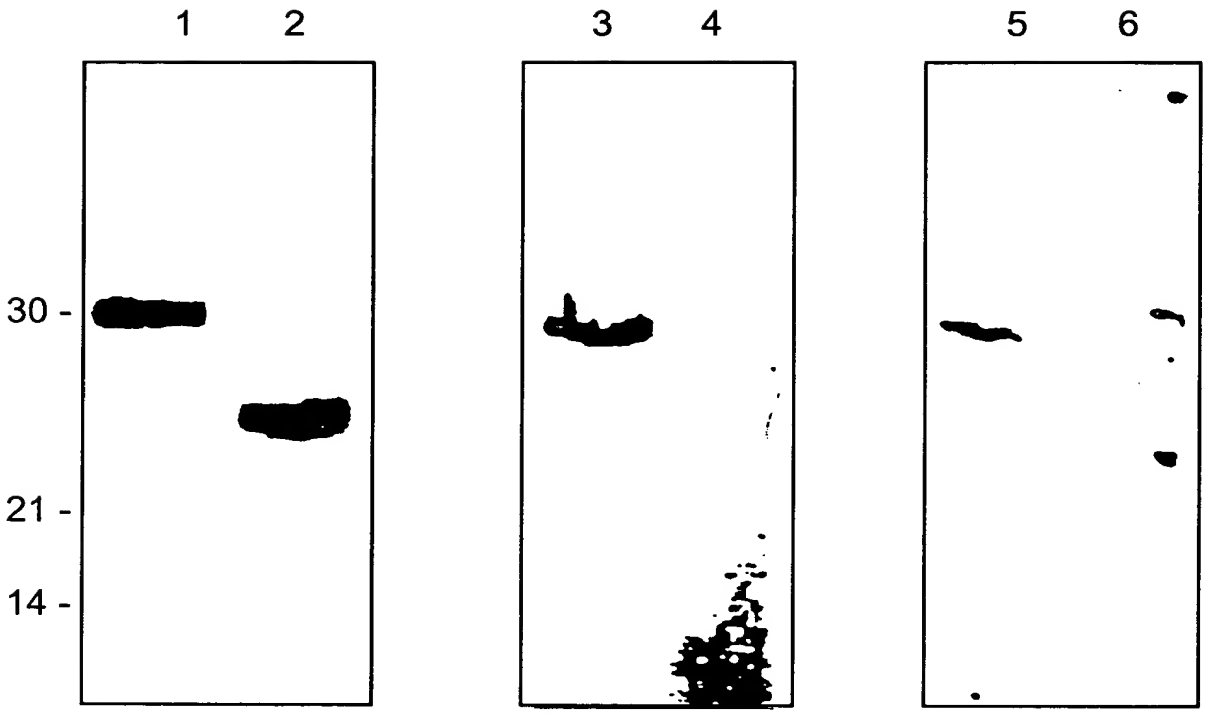

FIG. 48

OIPE JC1980 OCT 16 2002 PATENT & TRADEMARK OFFICE

I. (SEQ ID NO: 22)

/translation="MVKLAKAGKNQGDPKKMAPPPKEVEEDSEDEEMSEDEEDDSSGE
EVVIPQKKGKKAAATSAKKVVVSPTKKVAVATPAKKAAVTPGKKAAATPAKKTVTPAK
AVTTPGKKGATPGKALVATPGKKGAAIPAKGAKNGKNAKKEDSDEEEDDDSEEDEEDD
EDEDEDEDEIEPAAMKAAAAAPASEDEDDEDDEDDEDDDDDEEDDSEEEAMETTPAKG
KKAAKVVPVKAKNVAEDEDEEEDDEDEDDDDDEDDEDDDDEDDEEEEEEEEEEPVKEA
PGKRKKEMAKQKAAPEAKKQKVEGTEPTTAFNLFVGNLNFNKSAPELKTGISDVFAKN
DLAVVDVRIGMTRKFGYVDFESAEDLEKALELTGLKVFGNEIKLEKPKGKDSKKERDA
RTLLAKNLPYKVTQDELKEVFEDAAEIRLVSKDGKSKGIAYIEFKTEADAEKTFEEKQ
GTEIDGRSISLYYTGEKGQNQDYRGGKNSTWSGESKTLVLSNLSYSATEETLQEVFEK
ATFIKVPQNQNGKSKGYAFIEFASFEDAKEALNSCNKREIEGRAIRLELQGPRGSPNA
RSQPSKTLFVKGLSEDTTEETLKESFDGSVRARIVTDRETGSSKGFGFVDFNSEEDAK
EAMEDGEIDGNKVTLDWAKPKGEGGFGGRGGGRGGFGGRGGGRGGRGGFGGRGRGGFG
GRGGFRGGRGGGGDHKPQGKKTKFE"

(SEQ ID NO: 23)

II.

```
    1  ATTCTGCTGT AGACATAGAG ATGATGATCA TAGCTGACTA TGATGATGAT

   51  CCCCCGCGAG CCTGAAAGAG GAAATGCTCT GGTTTGCTAA GCCCGCGAAT

  101  CGAGTGAGAC CCACCCACAA AGCTAACCGT GGAAGTCACT GGCGGCCTCC

  151  TTCGCCCTGC CAGCCGGGGA ACCCATCCGG TGGCTCTCGA CCTGCTCCCG

  201  GGCCATCTGG TGACACTGAC TTCGCAGCCA CCACCTTAAT TGGCGCATTC

  251  GACCCAAATA ATAACCTGGG AACCTGTGGG CGGTCTAAGG CCCGGCTCTG

  301  CGGTCGCCCT CCCAGGCCCC TCTCCCTGGC CCTGTGAGGC CAGAAAGTTA

  351  CTTCTCCGAG GCCAGTTCCC CATGTCTGAG AAATATCTCC CAACTTGAGG

  401  TTCTGTGGGG TAGGGGAGGG TTCGTGACTT TCTCACAGAA AACCTCGTAC
```

FIG. 49

OIPE JC1/80
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451 AGACCCCGCC ACTGCCTTTA TTAACAGCTC TCAGGAGACT GCCTGCAGGA

501 GGGGGGTCGC TCCGGCCCCA TGCTCGCGGG CAAGCAGGGA TAAGCTGTGC

551 CTCCAAAAGG GCCAACGGGA ACTCCGCGGT CCCTGAACTT CCGGTGCTGG

601 AGGACTCCTC GCTCCAGGGC CACCAGGAGC CGCGGCGTGA GTGCGTGCCG

651 GAACCGAGGG CGGGGTCTCT GAGGAACTCC AAGGCTGCCC AAGCCTACGG

701 ACCCAGCCAC ATTGGCGAAC CGGAGACCGC CCGATTCCAC CACCCCCGCG

751 CTCCCCTCAC AGCCGGCGCC AAAAACGCCA GTCCCACGAC GCAGGCCGGG

801 ACCCGCGCGC CCACGGCCCA ATCAGCGCGA CCTTGCACAA AGCGAGCCCC

851 GCCCCCACGG CGCCGTTGCC AGCCCCTCCC CCTCCCGTGC CGCCTCGGCC

901 CGCCTACTCC CCGCCCCGCG CCGTTCACGG TTAGAGGCTC GCGATTGGCT

951 CATGGGGACG GCCGCGAGCT TTGGTTGGTC GGCGCGGAGT CACGAGGCGC

1001 CGTCGTCGCC TTTCCACAGG CGTTACTGGG CAGGCTCAGT CTTTCGCCTC

1051 AGTCTCGAGC TCTCGCTGGC TTCGGGTGTA CGTGCTCCGG GATCTTCAGC

1101 ACCCGCGGCC GCCATCGCCG TCGCTTGGCT TCTTCTGGAC TCATCTGCGC

1151 CACTTGTCCG CTTCACACTC CGCCGCCATC ATGGTGAAGC TCGCGAAGGT

1201 AAACGGCCTT GAGCGCGACG CAGACGTGTA GGCCTGCTTC CGAGGGGCGA

1251 GCGCGGCGCC GCGGGGAGGA GGGCCTGCGC GCAGTCCCGG GCGCGTTCTA

1301 GGGCGCCATG CTGCGGGAAG TCTCGCGCGA TTAGTGGGGA GGTCTCGCGC

FIG. 49 (CONT. 1)

O.I.P.E.
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1351 TTCTGGCTAC TTGGTGGCGA GGTGAAGAGC TTCTGCAGGT GCTGGGGGAG

1401 GGGGCGCTGG GCCTCGGGGT GGAGAGATGA GACCAAACTT TTGCGACGCG

1451 TACGAGCTGG GACTGACTCT GACGCACGTG CCCGGGAGCG TGCCTGCCAC

1501 GTGGGCCGGC GTAGGTCTGG AATCTCCAGA GGGACCGGGT GCCTTGGGCC

1551 GGGAAATGGC GGTATCGGCC CTAGTCGGAG TCCCGGCTGC GCTCGGATGT

1601 CTCCGCCCCG GCCTGGCAAG CCGATACGTG GTGGGCCCCG GAAGGTGGCT

1651 CTGCCGCGTG CCTTTTGCGC TGTGTTTCGG GCAAGAGGTG GTCCTGCCAG

1701 GTACCCCCAC GTGGCCGCAC CCGCCTCTTT AAGGGGCGGG GTAGTGCTGG

1751 GGAAAGGCAT AAGCTTCATG AGAAAATAAG GTAGTATTTT TAAGTGCCTT

1801 AATGATCTTC ACCGTTAATT TGATTCAAAT AAGGGTGGTA GATAAAGTAC

1851 CGGGATTTGT AGTATAAAAA CACGGTTGTG CTTAACTAAG GTAACGGGAG

1901 GAGAAATCAT TTCCTCAGGT TGACTTTTTA CCTTAGGGCA GGTTTTCTGT

1951 TGGTAAAGCC TGGGAGGAAA AATGTGGGCG GTTGAGAAGT AGTCCCTCTT

2001 GCATTGCCAT CAGGAGTAGT TTCTATGTTA GTTGTGGTGT TTGGCACTAT

2051 GAGAAATGAT CTGAGACGGA GATGATGGCG TATGAACACT AATGGCAAAA

2101 TATGAATGGC CTGAAATGTC GAGGTGGAGG TGTAATGATC TATTTGTGTC

2151 CATTTTAGGC AGGTAAAAAT CAAGGTGACC CCAAGAAAAT GGCTCCTCCT

2201 CCAAAGGAGG TAGAAGAAGA TAGTGAAGAT GAGGAAATGT CAGAAGATGA

FIG. 49 (CONT. 2)

OIPE
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2251 AGAAGATGAT AGCAGTGGAG AAGAGGTAAT TTTATCCAAC TTAATGCAGA

2301 ATTATGTTAA AACTACAAAA TGGAGAGTTA AGACATGAAA TTGGATATCT

2351 GTGGCAAAAA TAAGATTTTA TCAGGTATGT CTTATTGTAG TGGTTGAGTG

2401 TTTCACAAGC TCTTCATTGA CATGTCAAGA TGTCATTTGG CTAGTATTTG

2451 AATGTGAGTG CTAAGACGAG ACTGGGAATT TCTTTTACAT GTTCCTCTGC

2501 AGGGCTTGGA GTGTGATTTG TTGTGTTAAA TCATTACATT TTTCCAGTTT

2551 CAACATGTTA GCTCACCCCC ACATGTAGAG CTGGGCATTG TATTCAGAGC

2601 TGAGAATAAC CTTACCAGAT TCCTTTCCTA TCCTCCGAAT TAAAATTAAT

2651 TGGTCTCCAT TCCATATATA TATAACTGTA TCACTACTGG TTAAGTACTC

2701 GGGTGTAGAC TGAGGGCTGC CACCTCTCTT TGGTACCATT GACCCTCTTT

2751 AGCCACCTCC TGGCCTTTTA TTTGCCTCCA CTATAAAGAC AGCTGAGCAC

2801 TGAATTGTGC TCAGGTTTTC GTTGAGAACC TGAATGAAAG TTTTACTCTC

2851 CACACATTGC CTTGATAAAA CTACGGGATT TTAATGTAGC TAAATGATGA

2901 CTTTTATCAA ACTACCATGC ACACTCTTTG ATGTGTGATA GTTTTGTAAG

2951 GAATATTTAT ATTTAGCCTA TTCATTTTTT GTCTCAGGTC CTAAGAATTG

3001 AGCTTCACTG GGCTTGGTGG ACCGCAACCA CGAGGGCCCC AATGATTTAA

3051 TAAGTTAATG CTTGGAGCCT CCTATGTGTA ACGTTCTGAA TAATTTACAC

3101 ATAGCAATTC ATGACCTTAA ACATGTAAGG ATGATACTAT TACCATTTTC

FIG. 49 (CONT. 3)

OIPE
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3151 AGATGAGAAA GTTGGGGCTT GGGAAAGTAT GAGGTGTAAG AATTCAGAGG

3201 GTCTGGTTCA GAGGTATTTT CAGTGTTCAA AAGAGTTCCT TATGTCTGGG

3251 TATTCACCTT ATTATAGGGG CTCTGACTTA AGACAACATA ACAGAAGCCT

3301 GGAGTTTTAA CATGTCATAT GTGTCATGCG TATGTCTTGA ACCAGAGGCA

3351 TTGCCAGAGT CTAACAACTC ATTGGGACCA TGGTTATCTT TTTGGGTGTG

3401 GGGCTGGACT TACTGGTTTG GTTTTCATTT ATCTCAAGGT CGTCATACCT

3451 CAGAAGAAAG GCAAGAAGGC TGCTGCAACC TCAGCAAAGA AGGTGGTCGT

3501 TTCCCCAACA AAAAAGGTTG CAGTTGCCAC ACCAGCCAAG AAAGCAGCTG

3551 TCACTCCAGG CAAAAAGGCA GCAGCAACAC CTGCCAAGAA GACAGTTACA

3601 CCAGCCAAAG CAGTTACCAC ACCTGGCAAG AAGGGAGCCA CACCAGGCAA

3651 AGCATTGGTA GCAACTCCTG GTAAGAAGGG TGCTGCCATC CCAGCCAAGG

3701 GGGCAAAGAA TGGCAAGAAT GCCAAGAAGG AAGACAGTGA TGAAGAGGAG

3751 GATGATGACA GTGAGGAGGA TGAGGAGGAT GACGAGGACG AGGATGAGGA

3801 TGAAGATGAA ATTGAACCAG CAGCGATGAA AGCAGCAGCT GCTGCCCCTG

3851 CCTCAGAGGA TGAGGACGAT GAGGATGACG AAGATGATGA GGATGACGAT

3901 GACGATGAGG AAGATGGTAA GGAGTTGTCT TGGTAGTTAC TGGGCTTCTG

3951 ATTACAAGGT ATCTTGAGAT TCTGGGATCA CATATTCCTT CATCGTACAA

4001 CCTGGAGATG AGATTAGAAT CTTGTGGGAA TTCTCTTGGG TTGTTGTGGT

FIG. 49 (CONT. 4)

OIPE
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4051 GTGCTAGACT TAATTACCCA TGAATGATTT TGTCCTCTTG AGAAAATTTC

4101 AATAGCACAT CTATTAGTGT TTTTTATAAT GTAGGATTTT CGTTTCTAAG

4151 TGATTTTTTT TTTTTTTTAA ATTTTTTTGA GATGGAGCTT TTGCTGTTTC

4201 CCAGGCGGGA GTGCAATGGC GCGCTATCTC GGCGCACTGC AGCCTCCATC

4251 TCCTGGGTTC AAGCAGTTCT GCCTCAGCCT CCCGAGTAGC GGGATTACAG

4301 GTGCCCACCA CCACACCCTA CTAATTTTGT ATTTTAGTAG AGACGACATT

4351 TCACCATGTT GGCCAGGCTG GCTCTGAACT TTGACCTCAG GTGATCCACC

4401 CACCTTAGGC TCTCCCAAAG TGCTAGGATT ACAGGTGAGA TATGCTGCGC

4451 CCGGCCCCAA GTGATCTATT CTTGCCATGA CTGTTAACTA AACATGGTGA

4501 CAGGATTCGA TTTTCTTTAC ATTAGATTTG AAAACCGATG TTGGTTTTGG

4551 GAGATTGCTG CAATTTTTAG GTGACTTCTC TTTCAGACTC TGAAGAAGAA

4601 GCTATGGAGA CTACACCAGC CAAAGGAAAG AAAGCTGCAA AAGTTGTTCC

4651 TGTGAAAGCC AAGAACGTGG CTGAGGATGA AGATGAAGAA GAGGATGATG

4701 AGGACGAGGA TGACGACGAC GACGAAGATG ATGAAGATGA TGATGATGAA

4751 GATGATGAGG AGGAGGAAGA AGAGGAGGAG GAAGGTACTT AAATTAGATT

4801 CTGACATACG ACATGAGTTA TGTTTAAAGG AGGCACTTAA GTGTTTGTGG

4851 CTACTGATGT GTGATACATT GTTTGACATC TTGTCCAGAG CCTGTCAAAG

4901 AAGCACCTGG AAAACGAAAG AAGGAAATGG CCAAACAGAA AGCAGCTCCT

FIG. 49 (CONT. 5)

OIPE JC
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4951 GAAGCCAAGA AACAGAAAGT GGAAGGTAAC TTGCAGAATT AGGGGATATG

5001 GGGGAGATAA ACAGCACAAA TGATGAATAA CAAAGGGACT TAATACTGAA

5051 ACCAGATGTT ACATTGTAGT GTGCTGATGT GCTGTGTATA GAAATTTTGC

5101 TTTGGAAACT AACTTTTTAC CACACTACAA GTAGACTGAG TTGAGCTTTT

5151 TTTGTGCAGG CACAGAACCG ACTACGGCTT TCAATCTCTT TGTTGGAAAC

5201 CTAAACTTTA ACAAATCTGC TCCTGAATTA AAAACTGGTA TCAGCGATGT

5251 TTTTGCTAAA AATGATCTTG CTGTTGTGGA TGTCAGAATT GGTATGACTA

5301 GGTAGCTGCT TCACTGCACG TTACATACCG TGGGTCTGTT AATTTTTCCT

5351 TCCCCTGTTA GCACAGTTAC TTTAGCCTGC CACTGTTAAA CATGAATACT

5401 GTAAACACTT CAAGGTTAGC ATTAGTGAAC TAAGTTAGAA TTAAACTGTA

5451 GATCCCCTAA GTTGCAATTT CCATAATCAG TCGTAACTTG GTATAGCACA

5501 GAATAATTTT TAGTAATTTT TTTGTTGTTT TTGTTATGTA TTGAGACGGA

5551 CGCTGGCTTT TGTTCAGGCT GGAGTACAGT GGCGCAATCT TGGCTCACTG

5601 CAACCTCTGC CTCCCGGGTT CAAGCGATTC TCCTGCCTAA CCTCCCAAGT

5651 GACTGGGATA CGGGTGCCAC TCACCATGCA TGGCTAATTT TTGTTTTGTA

5701 TTTAGTATCG ATTTCACCAT GTTGGTCGGC TGGTTTTGAA CTCCTGACCT

5751 CAAGTGATCC ACCCACCTCG GCCTCTCGAA GTGCTGGTAC AGCGTCACCA

5801 CCCTGCCAGT AAGTTTTAAT AATTTGGTGT TAGGTGGGAG AATGCTTGAA

FIG. 49 (CONT. 6)

OIPE JC:00
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5851 CCTGGGAGGC AGAGGTTGCA GTGAGCCAAG TTCGCGCCAC TGTACTCCAG

5901 CCTGGGCAAC AGATTGAGAC ACCGTCTCAA TTTAAAATAA TGTTTATTTT

5951 CTTGGAAGTA CCTTGAAACT ATTAGACCTG TCTAGTCATC ATAGTGAATA

6001 CTTTTATCCA GACAGGATTC TCCTGTATTA GTGCTTATAG GTGTTCTTTT

6051 GTCAGCTGCT ACTGTGAATT CTTATAAGCA ATTTAGCTCC ATGATGAAGA

6101 CCTCAAACGT GAATGTGCAT GTCATATCTT CATGCTGAGC CGTGTTCTGT

6151 AGCTGCAGTT TGCAGAGCCT TGACTTTGTT TTGCTATACT AGGGGTGCTT

6201 TTTAAAATGT GATCTTTGTT TGCACCATCA CATTTGTCTA GATACAGATT

6251 GTGATTTTGA TTTGTGTTTT CACCTGTTGT AATTTTGCCC TCCTCTCCAC

6301 CTGAAGGAAA TTTGGTTATG TGGATTTTGA ATCTGCTGAA GACCTGGAGA

6351 AAGCGTTGGA ACTCACTGGT TTGAAAGTCT TTGGCAATGA AATTAAACTA

6401 GAGAAACCAA AAGGAAAAGA CAGTAAGAAA GGTATGTAAG GCTTTATGAG

6451 TTATGCAATG AACTCAGGAG CTAGACTGCT AGGGAAAATG CTTTGTAACC

6501 CATTTCCCTT TGGTTTCCTC TTATTTTTTT TAAATCATTT TTTTCCTTTG

6551 GTTTCCTCTT AATGTGGGAA TTAAATGAGC TACAGTGTTT ACAAGGTACT

6601 TGGCACTGCT TGTCAGTGTA TAGGTAAATT CCTGAGTTAG GCAAGCAAGA

6651 GCACTCTTAT ACAGAACAAG AACCATTACA TGCACCTAAA TTAAGCTAAG

6701 GATCTTTCTT CACTGAAACT AGTTAGGTCC CTAATTACTC CCTATATACA

FIG. 49 (CONT. 7)

OIPE JC190
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6751 GTGTAATGTT TTGAATTGGT ACATTCACTT TTTTTGTTAT GCGCGTCTAC

6801 TCTAGGTTGA ACTCCAGTGT ACCTAACAGA GAGTTTGACA TCAAGGCTGT

6851 GACAACATGG AGGGACCACT TGTGTGTTGA CACTGCTATA TCTCCATATT

6901 TAGCACCGAG CCTTGTACAT ATAGGATCTC AAATTATTTG TTGATAGAGC

6951 TATGTGTGTT TTTCCCCTCT TTTTGTTGTT GCCCCCCACC TTTGGTTTTT

7001 CAGGCCACAG AGCTCATTTT TGTTTTTTTA ATCTAGAGCG AGATGCGAGA

7051 ACACTTTTGG CTAAAAATCT CCCTTACAAA GTCACTCAGG ATGAATTGAA

7101 AGAAGTGTTT GAAGATGCTG CGGAGATCAG ATTAGTCAGC AAGGATGGGA

7151 AAAGTAAAGG GTATGTTCTT CTATTGAAAT GTAAGGGTTT TATTAACATT

7201 AATGCACTTC CTGCTTTATA AAAGAAATAT TGGTTTGATT TCCTTAGGCG

7251 TGTAACTTGG ACAGTTTAAC CTGTAAGTTT GTGCCTCAGT AACCCATCTG

7301 TACCATGGGG ATAATGTACT CATAGGGTGA TTTTAAAAGA CAAAGCTAAT

7351 ACTTACAAAG AAGCAAGTTT AATGCCTATC TTACATAAAT ACTTTGTAAG

7401 TAGTAGCAGT TCTTTCAGTG AGGTGAGGTT ACATGAAAAA ATTCCAAGTA

7451 TTTGTAAAAC TAGTGGGAAG TAAGAGGGAA GCTCGAGTTT TGATTGAAAA

7501 GTGGACTAAA CAAGGGCATT TTATGTACTC AGATCTGAAG CAAGTTCTGT

7551 GTTGCTGAGG TAAAAGCATT TGTGTTAATA TGGTTTTAAA AACCATGAGT

7601 TCTTCTCCCT CCATTGCAGG ATTGCTTATA TTGAATTTAA GACAGAAGCT

FIG. 49 (CONT. 8)

OIPE JC100 OCT 16 2002 PATENT & TRADEMARK OFFICE

7651 GATGCAGAGA AAACCTTTGA AGAAAAGCAG GGAACAGAGA TCGATGGGCG

7701 ATCTATTTCC CTGTACTATA CTGGAGAGAA AGGTCAAAAT CAAGACTATA

7751 GAGGTGGAAA GAATAGCACT TGGAGTGGTA AGAAATTAGG CTTGTTCCAA

7801 GGTTTTCAGA ATTGGTTGAG GGAACTCTTC TAGTCTTTGT ATTTCATAAG

7851 TTTATAAATA CTTTTTAATC AAAGTTACTC AAATGTAGGT GAAGATCAAG

7901 GACATGATAC CCCAAGTCAT ACTCTTATTT GGAATAGTAA TTTCCAATCT

7951 TGAAATGAGA GCTCTAAATC ATTTTGCATT GGAATACAGT AGGCAAATCA

8001 AGCTTCCTTT GTAGGCATGT TTTATACTTT AAATGACTTG ACCATGTGCG

8051 TTTTGAACTC AGATGATTCT AGGAAAACAG ACCAGTCATC AGCCTATGTA

8101 AGAACAACCA GCAGGACATT GCAACACGTA CTAGGTACTT AATATGTTGA

8151 GTAACAGAAA TGGATTTAGC TTACGTCATG AGTATTTGTA TATAACTCAA

8201 GCACTGAAAT TCTTAGGGAA TAGATATTAC TGTTGTGACC GAAGCTGGGA

8251 CACTGTTTCA GAGTCTTAGG AATGTGGCTC TCTATTTCGA GGTGAATCAA

8301 AAACTCTGGT TTTAAGCAAC CTCTCCTACA GTGCAACAGA AGAAACTCTT

8351 CAGGAAGTAT TTGAGAAAGC AACTTTTATC AAAGTACCCC AGAACCAAAA

8401 TGGCAAATCT AAAGGGTAAG ATAATACCTT TGTATCATCA GTTATAGGCC

8451 TATATATGTC TTAGAGGTCT AAGGACGTAA GGTCATGTGT CCTGTAGAAA

8501 AAAGCTAAAT AATTTTAGCC TAGTAAATGA GTGTAAAATA AGTATATTTA

FIG. 49 (CONT. 9)

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8551 GGTCCAACCT TGAGAGAAGG GCCTTGGCCA GATCATGTGA CCAGTGGTAT

8601 AGAGAGCATG TGCCTGGTAA ATTACTCTAA GCATTAACTG TTCATCCTCA

8651 GGTATGCATT TATAGAGTTT GCTTCATTCG AAGACGCTAA AGAAGCTTTA

8701 AATTCCTGTA ATAAAAGGGA AATTGAGGGC AGAGCAATCA GGCTGGAGTT

8751 GCAAGGACCC AGGGGATCAC CTAATGCCAG AAGCCGTAAG TTCACCTGGT

8801 TAGGGTGCTG TGGTTGGGGG TAGCACTCTC GGTGCTTTGT TTATTTTTGC

8851 ACAAATTCTG TGTTTCCTGT TCGCTACTGA GTGAACAATA ACTGGATATC

8901 GATGACTGAT TACCTGAGAA ATAATTGATG AAATCTCAAG AAAATTCCTC

8951 TAGATAGTCA AGTTCTGATC CAGCTGTCGT CAACTCAGAG TAGCAAGTTT

9001 GCCCATGATT TCCTGCCCCA TCCACTGGGC CCCACCTGCT TGGGTTGCTT

9051 TCCCACTTTC CATAGAAGAC TGGGGCAGGA TATCAACTAT GCAATGGCAA

9101 TTAAAAAATG TAAACCCAGA ATAGCCTTTA CTTTAATTAA GGACTAGTTG

9151 GCTTAGTTGC TTTTAACTGC TTTTTCACTA TAACAAGTAT CTTGGCTAGT

9201 AGTCATACTA GGCATTGTGC AAATTCAGTG TACGAACTGT GAATTCACAT

9251 AAATCGCAAA TTTTTTTTTC CTTCCCAGAG CCATCCAAAA CTCTGTTTGT

9301 CAAAGGCCTG TCTGAGGATA CCACTGAAGA GACATTAAAG GAGTCATTTG

9351 ACGGCTCCGT TCGGGCAAGG ATAGTTACTG ACCGGGAAAC TGGGTCCTCC

9401 AAAGGGTAAG GGAAGGAAGC GTGAGTGCTG CTTCCACTTG AAGGGGTTTT

FIG. 49 (CONT. 10)

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9451 TGTTCTGTGC AGACCTTGAG TCTAATGTGT CTTCTCATTG AGCTCCTTCT

9501 GTCTATCAGT GGCAGTTTAT GGATTCGCAC GAGAAGAAGA GAGAATTCAC

9551 AGAACTAGCA TTATTTTACC TTCTGTCTTT ACAGAGGTAT ATTTAGCTGT

9601 ATTGTGAGAC ATTCTGGGGT TCAAGCTGTC ACACCAGTTA GTTTTCCATA

9651 GAGAGCTACT CTGCTGCACT GGTATCTTTT TCCCAAATAA ACAAGGCTAC

9701 TTCTGTGGGA TGGCTCCCCA GCATGTACAG TTAACTTGGG ACATGTGTAG

9751 TAGGTGCTTT TTATAATGGG CAATTTCATT TGGTGTTCTA GGTTTGGTTT

9801 TGTAGACTTC AACAGTGAGG AGGATGCCAA GGAGGCCATG GAAGACGGTG

9851 AAATTGATGG AAATAAAGTT ACCTTGGACT GGGCCAAACC TAAGGGTGAA

9901 GGTGGCTTCG GGGGTCGTGG TGGAGGCAGA GGCGGCTTTG GAGGACGAGG

9951 TGGTGGTAGA GGAGGCCGAG GAGGATTTGG TGGCAGAGGC CGGGGAGGCT

10001 TTGGAGGTAA GGCACGCAGA GATAATGACA CCACATAGCA TGTGCTCTTC

10051 AGACCCTGTG CCCTGTCACG GTTCCTAATC ACTGGGGAGG AGGAGCTTTG

10101 TACCCATTCT TTTAACAGTG TCTTGCCTTC CTCCTGTAGG GCGAGGAGGC

10151 TTCCGAGGAG GCAGAGGAGG AGGAGGTGAC CACAAGCCAC AAGGAAAGAA

10201 GACGAAGTTT GAATAGCTTC TGTCCCTCTG CTTTCCCTTT TCCATTTGAA

10251 AGAAAGGACT CTGGGGTTTT TACTGTTACC TGATCAATGA CAGAGCCTTC

10301 TGAGGACATT CCAAGACAGT ATACAGTCCT GTGGTCTCCT TGGAAATCCG

FIG. 49 (CONT. 11)

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10351 TCTAGTTAAC ATTTCAAGGG CAATACCGTG TTGGTTTTGA CTGGATATTC

10401 ATATAAACTT TTTAAAGAGT TGAGTGATAG AGCTAACCCT TATCTGTAAG

10451 TTTTGAATTT ATATTGTTTC ATCCCATGTA CAAAACCATT TTTTCCTACA

10501 AATAGTTTGG GTTTTGTTGT TGTTACTTTT TTTTTTGTTT TTGTTTTTTT

10551 TTTTTTTGCG TTCGTGGGGT TGTAAAAGAA AAGAAAGCAG AATGTTTTAT

10601 CATGGTTTTT GCTTCACCGC TTTAGGACAA ATTAAAAGTC AACTCTGGTG

10651 CCAGACGTGT TACTTCCTAA AGAGTGTTTC CCCTGGAATC TCACTGGAGA

10701 GCATGGCAAA GCCAGCTCTG CCACTTGCTT CACCCATCCC AATGGAAATG

10751 GCTTAGTGCG TGTTTCCAGT ATCCCAGCCC TAACTAACTT GGTTGAAATG

10801 CTGGTGAGGG GACCTGCTCC TGCAGCCCTG GTGCTGACTT GAAGGCTGCT

10851 GCAGCTTCTC CTACTTTTAG CAGGTCTCGA GGATTATGTC TGAAGACCAC

10901 TCTGGAAAGA GGTCGAGGAA CAGATTAGTC AGGTTTCCTA GG

(SEQ ID NO: 24)

III. "MEMGRRIHLELRNRTPSDVKELVLDNSRSNEGKLEGLTDEFEEL
EFLSTINVGLTSIANLPKLNKLKKLELSDNRVSGGLEVLAEKCPNLTHLNLSGNKIKD
LSTIEPLKKLENLKSLDLFNCEVTNLNDYRENVFKLLPQLTYLDGYDRDDKEAPDSDA
EGYVEGLDDEEEDEDEEEYDEDAQVVEDEEDEDEEEEGEEEDVSGEEEEDEEGYNDGE
VDDEEDEEELGEEERGQKRKREPEDEGEDDD"

III. (SEQ ID NO: 25)

1 GCTGGTTGAG CCTTCAAAGT CCTAAAACGC GCGGCCGTGG GTTCGGGGTT

FIG. 49 (CONT. 12)

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51 TATTGATTGA ATTCCGCCGG CGCGGGAGCC TCTGCAGAGA GAGAGCGCGA

101 GAGATGGAGA TGGGCAGACG GATTCATTTA GAGCTGCGGA ACAGGACGCC

151 CTCTGATGTG AAAGAACTTG TCCTGGACAA CAGTCGGTCG AATGAAGGCA

201 AACTCGAAGG CCTCACAGAT GAATTTGAAG AACTGGAATT CTTAAGTACA

251 ATCAACGTAG GCCTCACCTC AATCGCAAAC TTACCAAAGT TAAACAAACT

301 TAAGAAGCTT GAACTAAGCG ATAACAGAGT CTCAGGGGGC CTGGAAGTAT

351 TGGCAGAAAA GTGTCCGAAC CTCACGCATC TAAATTTAAG TGGCAACAAA

401 ATTAAAGACC TCAGCACAAT AGAGCCACTG AAAAAGTTAG AAAACCTCAA

451 GAGCTTAGAC CTTTTCAATT GCGAGGTAAC CAACCTGAAC GACTACCGAG

501 AAAATGTGTT CAAGCTCCTC CCGCAACTCA CATATCTCGA CGGCTATGAC

551 CGGGACGACA AGGAGGCCCC TGACTCGGAT GCTGAGGGCT ACGTGGAGGG

601 CCTGGATGAT GAGGAGGAGG ATGAGGATGA GGAGGAGTAT GATGAAGATG

651 CTCAGGTAGT GGAAGACGAG GAGGACGAGG ATGAGGAGGA GGAAGGTGAA

701 GAGGAGGACG TGAGTGGAGA GGAGGAGGAG GATGAAGAAG GTTATAACGA

751 TGGAGAGGTA GATGACGAGG AAGATGAAGA AGAGCTTGGT GAAGAAGAAA

801 GGGGTCAGAA GCGAAAACGA GAACCTGAAG ATGAGGGAGA AGATGATGAC

851 TAAGTGGAAT AACCTATTTT GAAAAATTCC TATTGTGATT TGACTGTTTT

901 TACCCATATC CCCTCT

FIG. 49 (CONT. 13)

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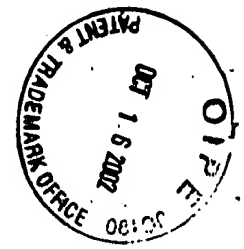
IV. (SEQ ID NO: 26)

"MSAPAAKVSKKELNSNHDGADETSEKEQQEAIEHIDEVQNEIDR
LNEQASEEILKVEQKYNKLRQPFFQKRSELIAKIPNFWVTTFVNHPQVSALLGEEDEE
ALHYLTRVEVTEFEDIKSGYRIDFYFDENPYFENKVLSKEFHLNESGDPSSKSTEIKW
KSGKDLTKRSSQTQNKASRKRQHEEPESFFTWFTDHSDAGADELGEVIKDDIWPNPLQ
YYLVPDMDDEEGEGEEDDDDDEEEEGLEDIDEEGDEDEGEEDEDDDEGEEGEEDEGED
D"

IV. (SEQ ID NO: 27)

```
   1  CGACCGCGGA GCAGCACCAT GTCGGCGCCG GCGGCCAAAG TCAGTAAAAA

  51  GGAGCTCAAC TCCAACCACG ACGGGGCCGA CGAGACCTCA GAAAAAGAAC

 101  AGCAAGAAGC GATTGAACAC ATTGATGAAG TACAAAATGA AATAGACAGA

 151  CTTAATGAAC AAGCCAGTGA GGAGATTTTG AAAGTAGAAC AGAAATATAA

 201  CAAACTCCGC CAACCATTTT TTCAGAAGAG GTCAGAATTG ATCGCCAAAA

 251  TCCCAAATTT TTGGGTAACA ACATTTGTCA ACCATCCACA AGTGTCTGCA

 301  CTGCTTGGGG AGGAAGATGA AGAGGCACTG CATTATTTGA CCAGAGTTGA

 351  AGTGACAGAA TTTGAAGATA TTAAATCAGG TTACAGAATA GATTTTTATT

 401  TTGATGAAAA TCCTTACTTT GAAAATAAAG TTCTCTCCAA AGAATTTCAT

 451  CTGAATGAGA GTGGTGATCC ATCTTCGAAG TCCACCGAAA TCAAATGGAA

 501  ATCTGGAAAG GATTTGACGA AACGTTCGAG TCAAACGCAG AATAAAGCCA

 551  GCAGGAAGAG GCAGCATGAG GAACCAGAGA GCTTCTTTAC CTGGTTTACT

 601  GACCATTCTG ATGCAGGTGC TGATGAGTTA GGAGAGGTCA TCAAAGATGA
```

FIG. 49 (CONT. 14)



651 TATTTGGCCA AACCCATTAC AGTACTACTT GGTTCCCGAT ATGGATGATG

701 AAGAAGGAGA AGGAGAAGAA GATGATGATG ATGATGAAGA GGAGGAAGGA

751 TTAGAAGATA TTGACGAAGA AGGGGATGAG GATGAAGGTG AAGAAGATGA

801 AGATGATGAT GAAGGGGAGG AAGGAGAGGA GGATGAAGGA GAAGATGACT

851 AAATAGAACA CTGATGGATT CCAACCTTCC TTTTTTTAAA TTTTCTCCAG

901 TCCCTGGGAG CAAGTTGCAG TCTT

V. (SEQ ID NO: 28)

CTTCGGGTGTACGTGCTCCGGGATCTTCAGCACCCGCGGCCGCCATCGCCGTCGCTTGGCTTCTTCTGGACTCATCTGCG
CCACTTGTCCGCTTCACACTCCGCCGCCATCATGGTGAAGCTCGCGAAGGCAGGTAAAAATCAAGGTGACCCCAAGAAAA
TGGCTCCTCCTCCAAAGGAGGTAGAAGAAGATAGTGAAGATGAGGAAATGTCAGAAGATGAAGAAGATGATAGCAGTGGA
GAAGAGGTCGTCATACCTCAGAAGAAAGGCAAGAAGGCTGCTGCAACCTCAGCAAAGAAGGTGGTCGTTTCCCCAACAAA
AAAGGTTGCAGTTGCCACACCAGCCAAGAAAGCAGCTGTCACTCCAGGCAAAAAGGCAGCAGCAACACCTGCCAAGAAGA
CAGTTACACCAGCCAAAGCAGTTACCACACCTGGCAAGAAGGGAGCCACACCAGGCAAAGCATTGGTAGCAACTCCTGGT
AAGAAGGGTGCTGCCATCCCAGCCAAGGGGGCAAAGAATGGCAAGAATGCCAAGAAGGAAGACAGTGATGAAGAGGAGGA
TGATGACAGTGAGGAGGATGAGGAGGATGACGAGGACGAGGATGAGGATGAAGATGAAATTGAACCAGCAGCGATGAAAG

FIG. 49 (CONT. 15)

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CAGCAGCTGCTGCCCCTGCCTCAGAGGATGAGGACGATGAGGATGACGAAGATGATGAGGATGACGATGACGATGAGGAA
GATGACTCTGAAGAAGAAGCTATGGAGACTACACCAGCCAAAGGAAAGAAAGCTGCAAAAGTTGTTCCTGTGAAAGCCAA
GAACGTGGCTGAGGATGAAGATGAAGAAGAGGATGATGAGGACGAGGATGACGACGACGACGAAGATGATGAAGATGATG
ATGATGAAGATGATGAGGAGGAGGAAGAAGAGGAGGAGGAAGAGCCTGTCAAAGAAGCACCTGGAAAACGAAAGAAGGAA
ATGGCCAAACAGAAAGCAGCTCCTGAAGCCAAGAAACAGAAAGTGGAAGGCACAGAACCGACTACGGCTTTCAATCTCTT
TGTTGGAAACCTAAACTTTAACAAATCTGCTCCTGAATTAAAAACTGGTATCAGCGATGTTTTTGCTAAAAATGATCTTG
CTGTTGTGGATGTCAGAATTGGTATGACTAGGAAATTTGGTTATGTGGATTTTGAATCTGCTGAAGACCTGGAGAAAGCG
TTGGAACTCACTGGTTTGAAAGTCTTTGGCAATGAAATTAAACTAGAGAAACCAAAAGGAAAAGACAGTAAGAAAGAGCG
AGATGCGAGAACACTTTTGGCTAAAAATCTCCCTTACAAAGTCACTCAGGATGAATTGAAAGAAGTGTTTGAAGATGCTG
CGGAGATCAGATTAGTCAGCAAGGATGGGAAAAGTAAAGGGATTGCTTATATTGAATTTAAGACAGAAGCTGATGCAGAG
AAAACCTTTGAAGAAAAGCAGGGAACAGAGATCGATGGGCGATCTATTTCCCTGTACTATACTGGAGAGAAAGGTCAAAA
TCAAGACTATAGAGGTGGAAAGAATAGCACTTGGAGTGGTGAATCAAAAACTCTGGTTTTAAGCAACCTCTCCTACAGTG
CAACAGAAGAAACTCTTCAGGAAGTATTTGAGAAAGCAACTTTTATCAAAGTACCCCAGAACCAAAATGGCAAATCTAAA
GGGTATGCATTTATAGAGTTTGCTTCATTCGAAGACGCTAAAGAAGCTTTAAATTCCTGTAATAAAAGGGAAATTGAGGG
CAGAGCAATCAGGCTGGAGTTGCAAGGACCCAGGGGATCACCTAATGCCAGAAGCCAGCCATCCAAAACTCTGTTTGTCA
AAGGCCTGTCTGAGGATACCACTGAAGAGACATTAAAGGAGTCATTTGACGGCTCCGTTCGGGCAAGGATAGTTACTGAC
CGGGAAACTGGGTCCTCCAAAGGGTTTGGTTTTGTAGACTTCAACAGTGAGGAGGATGCCAAGGAGGCCATGGAAGACGG
TGAAATTGATGGAAATAAAGTTACCTTGGACTGGGCCAAACCTAAGGGTGAAGGTGGCTTCGGGGGTCGTGGTGGAGGCA
GAGGCGGCTTTGGAGGACGAGGTGGTGGTAGAGGAGGCCGAGGAGGATTTGGTGGCAGAGGCCGGGGAGGCTTTGGAGGG
CGAGGAGGCTTCCGAGGAGGCAGAGGAGGAGGAGGTGACCACAAGCCACAAGGAAAGAAGACGAAGTTTGAATAGCTTCT
GTCCCTCTGCTTTCCCTTTTCCATTTGAAAGAAAGGACTCTGGGGTTTTTACTGTTACCTGATCAATGACAGAGCCTTCT
GAGGACATTCCAAGACAGTATACAGTCCTGTGGTCTCCTTGGAAATCCGTCTAGTTAACATTTCAAGGGCAATACCGTGT
TGGTTTTGACTGGATATTCATATAAACTTTTTAAAGAGTTGAGTGATAGAGCTAACCCTTATCTGTAAGTTTTGAATTTA
TATTGTTTCATCCCATGTACAAAACCATTTTTTCCTAC

FIG. 49 (CONT. 16)